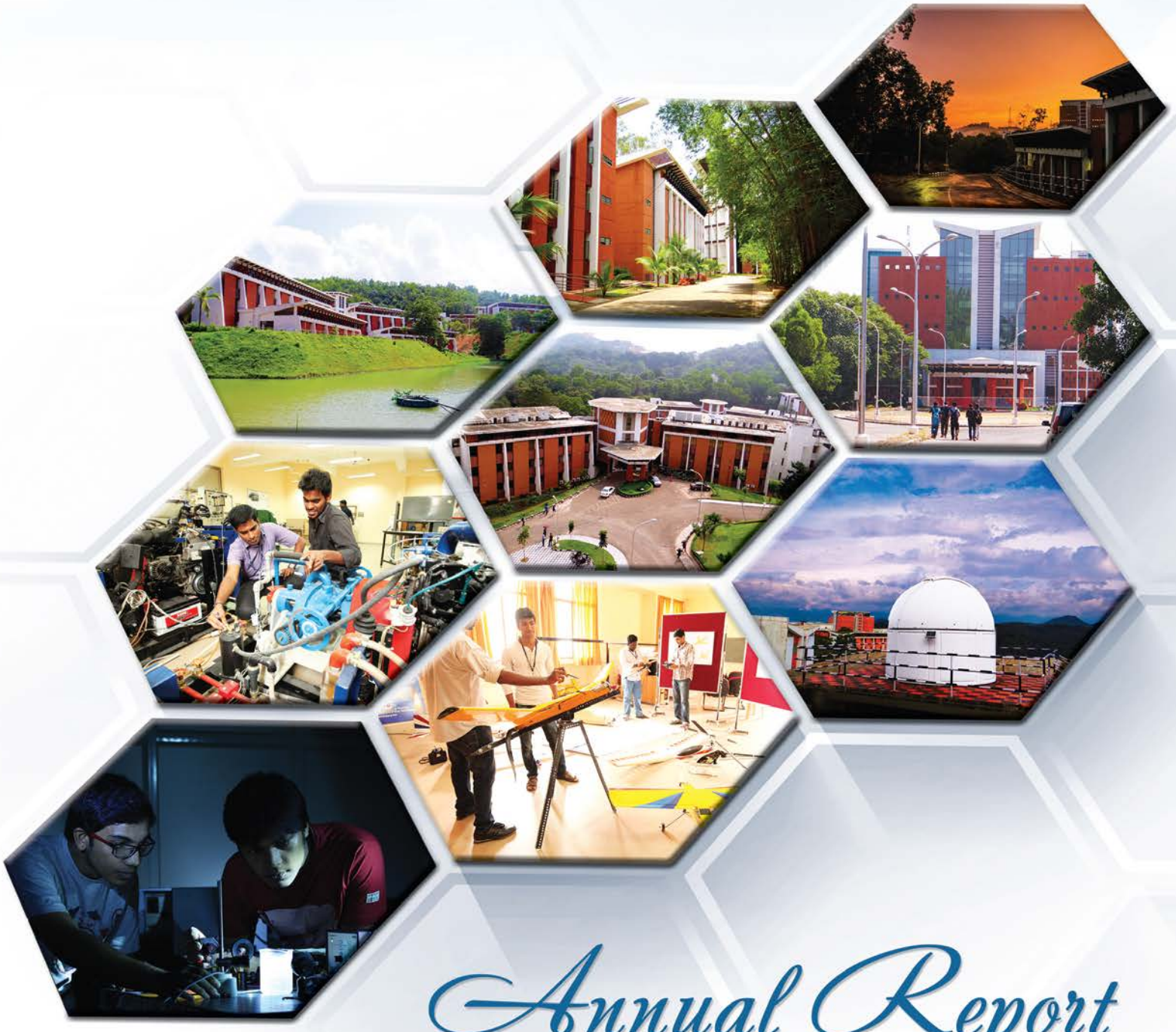
INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY



Annual Report

2017-2018

Annual Report

2017-2018

Indian Institute of Space Science and Technology

Declared as Deemed to be University under Section 3 of the UGC Act, 1956

An autonomous institute under Department of Space, Govt. of India

Valiamala, Thiruvananthapuram

www.iist.ac.in

Vision

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

&

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.*

Prof. U R Rao
Chancellor
(2015 - 2017)

Dr. B N Suresh
Chancellor
(Nov. 2017 - Continuing)

Shri. A S Kiran Kumar
President, IIST Governing Body
Chairman, IIST Governing Council
Secretary, DoS /Chairman, ISRO
(2015 - 2018)

Dr. K. Sivan
President, IIST Governing Body
Chairman, IIST Governing Council
Secretary, DoS /Chairman, ISRO
(Jan. 2018 - Continuing)

Dr. Vinay Kumar Dadhwal
Director &
Chairman, Board of Management

Dr. A. Chandrasekar
Registrar

DEANS

Dr. A. Chandrasekar
Academics

Dr. Raju K. George
Research & Development
and
Student Welfare

Dr. Kurien Issac
Intellectual Property
Rights &
Continuing Education

Dr. Kuruvilla Joseph
Student Activities

Contents

Foreword

It gives me immense pleasure to present the Eleventh Annual Report of IIST for the financial year 2017-18. It was a very eventful year where IIST put its best foot forward in all areas of its functioning, such as academics, research, and statutory UGC and AICTE expert evaluation, interactions with ISRO, international cooperation and infrastructure. This was only possible due to the dedicated efforts put by faculty, staff and students and strong support and guidance provided by distinguished scientists presiding as President of Governing Body and Chancellor.

Institute mourned the demise of its Chancellor, Prof. U.R. Rao on 24 July 2017 and was fortunate to welcome its founding Director, Dr. B. N. Suresh as its 3rd Chancellor on Nov 7, 2017. We salute the contributions of Prof. U. R. Rao to the space program of the country and his blessings and benign gaze on the functioning of the IIST. This year also had a change of leadership at the Department of Space(DOS) with superannuation of Shri. A. S. Kiran Kumar and taking over by Dr. K Sivan as Secretary, DOS and Chairman, Space Commission in January 2018. The institute places on record, with gratitude, its indebtedness to Shri. A. S. Kiran Kumar in ever encouraging the institute to gain standing in the academic and space research and providing counsel and generous support. Dr. K Sivan is very familiar to IIST and has been associated with it since inception and during the year also guided it as Member, Governing Body.

A five member UGC Expert Committee on functioning of the institute, headed by Prof SN Pandey visited IIST 29-31 January 2018 and based on its recommendations UGC in its 530th meeting, granted Deemed to be University status for next five years. Institute also applied for AICTE approval process due to recent Supreme Court directive and since then all technical academic programmes of IIST have been approved by AICTE.

IIST also participated in the National Institutional Ranking Framework (NIRF) 2018 of Ministry of Human Resources Development. It was ranked as 23rd in the Engineering Category. This is an improvement over last year NIRF 2017 rank of 28.

During the year the construction of two remaining academic blocks D1 (Interdisciplinary Science Block) and D3 (Avionics Block) was completed and these were handed over to the Departments for establishing classrooms and instructional and research laboratories in the additional built-up area of 15,000 sqm.

The fifth convocation of IIST was conducted on Sept14, 2017 where 151 BTech, 83 MTech and 11 PhD degrees were awarded. IIST welcomed 140 undergraduate, 70 post graduate and 28 PhD scholars for the academic year 2017-18. This year 101 IIST undergraduates were offered placement in ISRO, bringing the cumulative placement to ISRO by IIST to 775.

As the stature of the Indian space programme continues to grow, and clear recognition of space-derived services for citizens and security of the nation is happening, the space ecosystem of industry and new start-ups is undergoing a sea change. It is for IIST to provide for trained manpower and innovation for this ecosystem to make space economy realize its potential in the country.

Dr. Vinay Kumar Dadhwal
Director &
Chairman, Board of Management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Prof U. R. Rao - A Life Dedicated to ISRO

(Chancellor, IIST 28.10.2015 - 24.07.2017)

Prof. Udupi Ramachandra Rao, or popularly known as UR Rao passed away on July 24, 2017. An internationally renowned space scientist, he was as the second chancellor of the IIST and one of those who spent his life time to turn India into a world class space power. Under his guidance, beginning with the first Indian satellite 'Aryabhata' in 1975, over 18 satellites were designed and launched for providing communication, remote sensing and meteorological services.

After taking charge as Chairman, Space Commission and Secretary, Department of Space in 1984, Prof. Rao accelerated the development of rocket technology, resulting in the successful launch of ASLV rocket and the operational PSLV launch vehicle, which can launch 2.0 ton class of satellites into polar orbit. Prof. Rao initiated the development of the geostationary launch vehicle GSLV and the development of cryogenic technology in 1991. He has published over 350 scientific and technical papers covering cosmic rays, interplanetary physics, high energy astronomy, space applications and satellite and rocket technology and authored many books. A recipient of D.Sc. (Hon. Causa) Degree from over 21 Universities including University of Bologna, the oldest University in Europe, Prof. Rao, was decorated with several honours and accolades, including the Padma Vibhushan and was the only Indian to be included in the Satellite Hall of Fame of the Society of Satellite Professionals International, Washington.

Prof. UR Rao was actively contributing to development of IIST, almost until his last days. As a Chancellor, he has left ever lasting impression on IIST and his support, guidance and constructive suggestions, particularly in research and innovations have helped IIST reach its present level. IIST would continue to carry out his vision and ensure that it would strive the reach the level of excellence the former Chancellors had dreamt of.

Present Chancellor

Dr. B N Suresh

Dr. Byrana Nagappa Suresh assumed charge as Chancellor, IIST on 6th November 2017. Dr. B N Suresh, an aerospace scientist. served as the founder Director of IIST. He was the Director of Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram during the period 2003-2007. He is known for his contribution to Space Capsule Recovery Experiments (SRE). He retired from IIST in November 2010. Presently he is serving as Vikram Sarabhai Distinguished Professor at ISRO Headquarters since November 2010. He was also distinguished Professor at IIT, Mumbai and MIT, Manipal.

IIST AT A GLANCE 2017-18

Departments and its Strength

Department	Academic Faculty	Technical/Scientific Staff
Aerospace Engineering	25	18
Avionics	26	9
Chemistry	8	5
Earth and Space Sciences	13	3
Humanities	5	0
Mathematics	11	3
Physics	13	8

Administration

Officers	14
Administrative	9

B.Tech (Year Wise Enrollment)

Admission Year	Aerospace Engineering	Avionics	Physical Science/Engineering Physics	Total
2007	49	60	29	138
2008	51	64	33	148
2009	53	66	34	153
2010	53	60	34	147
2011	58	58	23	139
2012	53	54	25	132
2013	60	60	36	156

2014	60	60	33	153
2015	60	58	20	138
2016	60	60	20	140
2017	60	60	20	140
Total	617	660	307	1584

M.Tech. / Master of Science (Year Wise Enrollment)

Admission Year	SC & ML	CS	OE	SST	MST	ESS	GI	A&AP	A&FM	T&P	S&D	CS	DSP	PE	VLSI & MS	RF&ME	Total
2010	14	8															22
2011	2	5															7
2012	3	4															7
2013	4	-	5	3	3		3	4	4	7	3	6	6		4	6	58
2014	6	-	6	4	7	5	5	4	7	8	8	6	8		7	7	88
2015	4	-	5	5	6	3	5	6	7	7	8	5	5		9	5	80
2016	5	-	5	5	6	4	4	5	3	4	5	3	6	4	3	5	67
2017	6	-	1	0	6	3	5	3	6	7	8	5	2	5	8	5	70
Total	44	17	22	17	28	15	22	22	27	33	32	25	27	9	31	28	399

(**SC& ML**- Machine Learning and Computing, **CS**- Control Systems, **OE**- Optical Engineering, **SST**- Solid State Technology, **MST**- Materials Science and Technology, **ESS**- Earth System Sciences, **GI**- Geoinformatics, **A&AP**- Astronomy and Astrophysics, **A&FM**- Aerodynamics and Flight Mechanics, **T&P**- Thermal and Propulsion, **S&D**- Structures and Design, **DSP**- Digital Signal Processing, **PE**- Power Electronics, **VLSI & MS**- VLSI and Microsystems, **RF&ME**- RF & Microwave Engineering)

PhD (Year Wise Enrollment)

Admission Year	Students Admitted	
	Full Time	Part Time
2008	0	1
2009	0	2
2010	15	5
2011	18	12
2012	16	2
2013	17	3
2014	13	4
2015	23	5
2016	43	13
2017	20	8
Total	165	55
Grand Total	**220**	

Other Details

Post Doctoral Scholars	6
No. of Research Projects	82
No. of Journal Papers	201
No. of Conference Papers	113
No. of Books Published	5
No. of PhD Thesis Accepted	11
No. of Patents	2

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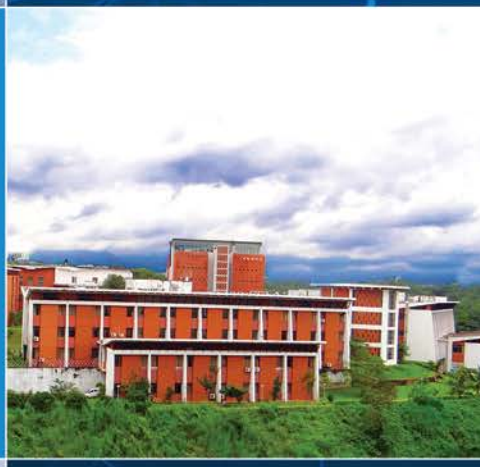
Visit Abroad(Faculty)	24 visits by 15 faculty
Visit Abroad(Students)	9
Placement(BTech- ISRO)	104
Placement(BTech- Placement Cell)	8
Placement(MTech- Placement Cell)	21
Internship Offered	61
Institute Lectures	30
Conferences/ Seminars/Workshops	11
New Books Added in the library	1983

RTI Status

Application Received through CPIO and otherwise	Information forwarded to CPIO	Appeal	CIC Hearing
76	76	07	02

Vigilance Status

Number of Vigilance Cases : NIL



THE INSTITUTE

P.C. | Prasoon C M, IIST

1. THE INSTITUTE

Indian Institute of Space Science and Technology (IIST), a Deemed to be University under Section 3 of the UGC Act 1956, established by the Department of Space(DOS), Government of India, in 2007, has moved into its eleventh year with renewed vigour and accomplishments. The institute offers undergraduate, post-graduate, doctoral and post-doctoral programs in broad areas of space science, space technology and their applications. The major events during 2017-18 include

(I) Third Review of functioning of IIST by UGC Expert Committee,
(ii) As per recent ruling of Supreme Court, institute applied for recognition of its courses to AICTE and evaluation team visited IIST,
(iii) Institute participated in the Ministry of Human Resources Development (MHRD) National Institutional Framework (NIRF 2018), and
(iv) In order to mark completion of 10 years of IIST, it conducted a major collaborative Review with ISRO Experts on IIST Strategy for Next Decade (2017-2027).

UGC expert committee visited IIST during January 29-31, 2018. The UGC Review Team was headed by Prof Sheo Narayan Pandey, Vice Chancellor, Pandit Ravishankar Shukla University and had Prof. Tarun Souradeep, Fellow, IUCAA, Pune, Prof. Kuppuswamy Porsezian, Fellow, Pondicherry University, Prof. M L Kansal of IIT(Roorkee) as AICTE nominee, and Dr. (Mrs) Renu Batra, UGC Official, Delhi as members. The team reviewed the functioning of the Institute and based on its report the UGC in its 530th meeting, extended the Deemed to be University status to IIST for the next five years. UGC review team was impressed by the institute and wrote in the evaluative report that the products of the institute is very well appreciated at national and international level. It recommended that that the institute has the full potential to earn the status of the "Institute of National Importance" and should take appropriate measures in this regard.

AICTE team visited IIST on March 3, 2018. The team included Prof. R K Pant, Professor, IIT Bombay, Powai, Mumbai, Prof. M Ramakrishna, Professor, IIT Madras, Chennai, Prof. K K Singh, Professor, NIT Kurukshetra, Haryana and Prof. M L Kansal, Professor, IIT Roorkee, Uttarakhand as AICTE Nominee. The team approved all the undergraduate as well as postgraduate programs of the institute, as part of IIST's successfully completing the approval process of AICTE.

Road Map of IIST

Fully committed to build on the platform of 10 yrs of success and achievements, IIST, has created a draft roadmap for the next decade focussing on Basic Research for Space Sciences, Space Technology and Applications, Education, Infrastructure, Governance and Collaboration. This was presented before Shri. A S Kiran Kumar, Chairman, Governing Council, IIST & Chairman, ISRO and other centre Directors on September 14, 2017. This strategic plan identifies the means by which the institute intends to advance in the coming year and establish itself as an Institute of National importance.

NIRF 2018

The year 2017-18 saw IIST improving its NIRF ranking, set up by the Ministry of Human Resource Development (MHRD), Government of India, by five places to be ranked 23rd among all Engineering institutions in the country. IIST is also ranked in the top 10 among these institutions for 'Teaching and Learning Resources'.

The composition of the statutory bodies of the institute is summarized here. Board of Management held its 17th meeting on September 6, 2017 at IIST. Academic Council held its 7th and 8th meetings on 22 May 2017 and 14 March 2018, respectively. Finance Committee held its 11th meeting on 18th August 2017 at DOS Headquarters, Bengaluru.

1.1 The Governing Body

A S Kiran Kumar (April, 2017 - December,2017) K Sivan (January, 2018 - Continuing)	Secretary, DOS /Chairman ISRO **President**
Vandita Sharma (April 2017 - November 2017) Anoop Srivastava (November 2017 - Continuing)	Additional Secretary, DOS
S Kumaraswamy	**Joint Secretary,** DOS
P G Diwakar	Scientific Secretary ISRO Headquarters
M S Chandrashekar	Deputy Director Personnel Policy and Programme Management (PP&PM) ISRO Headquarters
S Somanath	Director, VSSC
V Narayanan	Director, LPSC
Y V N Krishnamurthy	Director, NRSC
Tapan Misra	Director, SAC
Vinay Kumar Dadhwal	Director, IIST Secretary

1.2 Governing Council

A S Kirankumar (April, 2017- December, 2017) K Sivan (January, 2018 - Continuing)	Secretary, DOS, Chairman ISRO **President**
Vandita Sharma (April 2017 - November 2017) Anoop Srivastava (November 2017- Continuing)	Additional Secretary, DOS
P G Diwakar	Scientific Secretary ISRO Headquarters
S Kumaraswamy	Joint Secretary (Personnel), DOS
Anoop Srivastava	Joint Secretary (Finance& Accounts), DOS
Chintamani Manohar Sane	Joint Secretary (Finance), DOS
Vinay Kumar Dadhwal	Director, IIST Member Secretary

1.3 Board of Management

Vinay Kumar Dadhwal	Director, IIST **Chairman**
S Kumaraswamy	Additional Secretary (In Charge) Department of Space
P G Diwakar	Scientific Secretary, ISRO Headquarters
Partha Pratim Chakrabarti	Director, IIT Kharagpur
Bhaskar Ramamurthi	Director, IIT Madras
A Ajayaghosh	Director, NIIST
A Chandrasekar	Dean (Academics), IIST
K Kurien Issac (Period ended on 15/12/2017)	Dean (IPR &CE) , IIST
Raju K George	Dean (R&D) & (Student Welfare), IIST
Kuruvilla Joseph (Period ended on 15/12/2017)	Dean (Student Activities), IIST
A Chandrasekar	Registrar, IIST Secretary
V Narayanan	Director (LPSC)
Y V N Krishnamurthy	Director NRSC Nominee of Spacing Society
Prof. C S Narayana Murthy (15/12/2017- continuing)	Senior Professor, Department of Physics, IIST
Nirmala R James (15/12/2017- continuing)	Professor &Head Department of Chemistry, IIST
Harsha Simha	Assistant, Professor Department of Avionics, IIST

1.4 Finance Committee

Vinay Kumar Dadhwal	Director, IIST **Chairman**
Vandita Sharma (April 2017 - November 2017) Anoop Srivastava (November 2018 - Continuing	Additional Secretary Department of Space
Bijay Kumar Behera	Associate Director, BEA ISRO Headquarters
A Chandrasekar	Registrar, IIST

Sivanandan G	|	Sr. Head Accounts / IFA LPSC, Valiamala
Raju K George	|	Dean (R&D) and (Student Welfare), IIST
R Hari Prasad	|	Deputy Registrar (Finance) / Finance Officer Member Secretary

1.5 Academic Council

Vinay Kumar Dadhwal	|	Director, IIST
A Chandrasekar	|	Dean, Academic
Raju K George	|	Dean, R & D
Kuruvilla Joseph	|	Dean, Student Activities
K Kurien Issac	|	Dean, IPR & CE
K Sudhakar	|	Former Professor IIT Bombay
K R Ramakrishnan	|	Professor IISc Bangalore
A Ajayaghosh	|	Director NIIST Trivandrum
B S Manoj	|	Professor & Head Department of Avionics
Nirmala R James	|	Professor & Head Department of Chemistry
Anandmayee Tej	|	Professor & Head Department of Earth and Space Sciences
K S S Moosath	|	Professor & Head Department of Mathematics
Manoj T Nair	|	Associate Professor & Head Department of Aerospace Engineering
V Ravi	|	Associate Professor & Head Department of Humanities
S Murugesh	|	Associate Professor & Head Department of Physics
C S Narayanamurthy	|	Senior Professor Department of Physics
C V Anilkumar	|	Professor Department of Mathematics
A Salih	|	Professor Department of Aerospace Engineering
N Sabu	|	Professor Department of Mathematics

Anup S	Associate Professor Department of Aerospace Engineering
N Selvaganesan	Associate Professor Department of Avionics
L Gnanappazham	Associate Professor Department of Earth and Space Sciences
K Prabhakaran	Associate Professor Department of Chemistry
Naveen Surendran	Assistant Professor Department of Physics
Pradeep Kumar P	Assistant Professor Department of Aerospace Engineering
A Chandrasekhar	Registrar, IIST Secretary

ACADEMIC DEPARTMENTS

2. ACADEMIC DEPARTMENTS

The academic programmes of the institute are run by seven departments comprising of two engineering, four scientific and a humanities department. Faculty, scholars, laboratories and other relevant details are provided here.

2.1 Department of Aerospace Engineering

IN NUMBERS

25 Faculty Members
36 Research Scholars
21 M.Tech Students
18 Laboratory Staff/Technical Staff

Aerospace Engineering deals with the design and development of machines that fly. These machines could be aircraft that fly within Earth's atmosphere such as gliders, fixed-wing aeroplanes and helicopters, or spacecraft that fly outside Earth's atmosphere.

The department offers one undergraduate degree (BTech) in Aerospace Engineering, three postgraduate degrees (MTech), and a PhD programme. Aerospace engineering requires in-depth skills and understanding in physics, mathematics, aerodynamics, flight mechanics, propulsion systems and materials science. In the undergraduate programme, the students develop a basic understanding of these core areas. The postgraduate programmes are offered in three specialisations: a) aerodynamics and flight mechanics, b) thermal and propulsion, c) structures and design. These courses further strengthen the knowledge in the respective streams. The postgraduate courses give equal emphasis on research and design with the students having the option of taking advanced electives and design courses.

Faculty & Core Research Areas

Head of Department

Manoj T Nair
PhD (IIT, Kanpur) | Aerodynamics, Computational Fluid Dynamics.

Dean (Intellectual Property Rights & Continuing Education)

Kurien Issac K
PhD (IIT, Madras) | Kinematics, Dynamics and Robotics.

Adjunct Professors

Ramanan R V PhD (University of Kerala)	Space Missions: Optimal Trajectory/Manouvre Design.
Raveendranath P PhD (IIT, Kharagpur)	Advanced Finite Element Method.

Professors

Abdusamad Alias Salih PhD (IIT, Kharagpur)	Numerical solution of multiphase flows.

Associate Professors

Anup S PhD (IIT, Madras)	Mechanics of biological and bio-inspired composites.
Aravind.V PhD (University of Florida, USA)	Laser Diagnostics, Combustion.
Chakravarthy P PhD (IIT, Madras)	Fundamental and applied research in Combustion.
Deepu M PhD (NIT, Calicut)	Computational fluid mechanics, heat transfer, and combustion.
Girish B S PhD (Anna University, Chennai)	Sequencing and scheduling issues in manufacturing systems and Air traffic management, vehicle routing and scheduling issues in supply chains.
Prathap C PhD (IIT, Delhi)	Fundamental and applied research in Combustion.
Shine S R PhD (IIST, Thiruvananthapuram)	Heat transfer in Space Applications.
Vinoth B R PhD (IIT, Kanpur)	Aerodynamics, Aeroacoustics, Unsteady flows, Flow instability, Experimental methods.

Pradeep Kumar P PhD (IIT, Bombay)	Two-phase flow and heat transfer, Electronic cooling in micro and macro scale.
Praveen Krishna I R PhD (IIT, Madras)	Nonlinear Dynamics, Fluid Structure Interaction, Acoustics.

Assistant Professors

Arun C O PhD (IIT, Madras)	Structural mechanics, Computational Mechanics-Meshfree, methods, Finite element method, Stochastic mechanics, Structural reliability, Sloshing of liquid in tanks, Design of steel structures, Thin-walled structures etc.
Bijudas C R PhD (IIT, Bombay)	Structural Health Monitoring.
Dhayalan PhD (IIT, Kanpur)	Flight Dynamics, Aircraft System Identification.
Devendra Prakash Ghate PhD (University of Oxford, UK)	Multidisciplinary optimisation.
Mahesh S PhD (IIT, Kanpur)	Jet/Swirl flame characteristics, Micro combustion.
Manu K V PhD (IISc, Banglore)	Fluid Dynamics.
Rajesh S PhD (University of Karlsruhe, Germany)	Optical and Laser Diagnostics, Combustion.
Satheesh K PhD (IISc, Bangalore)	High Temperature Aerodynamics.
Sooraj V S PhD (IIST, Thiruvananthapuram)	Machining and Precision Manufacturing.

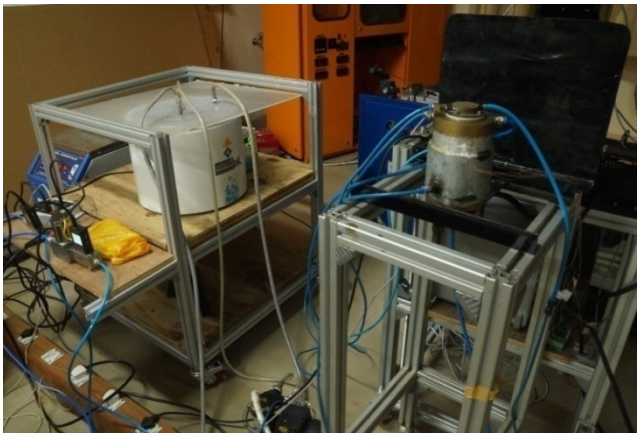
Reader (on Contract)

Sam Noble M.Tech. (University of Kerala)	Robotics, optimisation.

Laboratory Facilities

Flame Diagnostics Lab

Thermal Lab



Propulsion Lab

Major lab facilities established under Department of Aerospace Engineering include

- Engineering workshop
- Strength of Materials Lab
- Engineering Drawing Lab
- Thermal and Propulsion Lab
- Fluid Mechanics Lab
- Heat Transfer Lab
- Computer Aided Design and Analysis Lab
- Metrology and Computer Aided Inspection Lab
- Manufacturing Processes Lab
- Materials Characterization lab
- Aerospace Structures Lab
- Aerodynamics Lab
- Flame Diagnostics Lab
- Flight Mechanics Lab

The manufacturing processes lab and Engineering workshop under Department of Aerospace Engineering does effectively support many of the project and research related activities in IIST, encompassing all the departments in IIST.

During 2017-18 various equipments that were added to the laboratories include: Schileren unit, high speed camera for PIV applications, flat flame burner, mass flow controller, piezo resistive transducer, micro fluids syringe pump, stereo microscope, condenser microphones, high speed LED light, electronic traverse system, multi-purpose multi-axis CNC platform, dynamic and unsteady pressure transducer, digital delay pulse generators and 6 workstations, AC/DC Welding Power Plant and A mini CNC platform for lab scale testing/ experimentation purposes.

AC/DC Welding Power Plant

2.2 Department of Avionics

IN NUMBERS

26	Faculty Members
29	Research Scholars
01	Post Doctoral Fellows
46	M Tech Students
09	Laboratory/Technical Staff

The Avionics department ensures the deeper understanding of the fundamentals and advanced courses of Avionics with a special thrust to enhance research capability of students to undertake the challenges in the field of avionics engineering. The department offers undergraduate course in Electronics and Communication with specialization in Avionics and post graduate courses in RF and Microwave Communication, Digital Signal Processing, Control Systems and VLSI & Microsystems. Moreover, the department also offers Ph.D. in various disciplines of Avionics/ Electrical/ Electronics/ Communication/ Computer Science Engineering.

Faculty & Core Research Areas

Head of Department

Manoj B S
PhD (IIT, Madras)

| Computer networks, internet security, next generation internet, wireless networks, ad hoc wireless networks, wireless mesh networks, sensor networks, complex networks, and cyber security

Satish Dhawan Professor

P P Mohanlal

| Inertial sensors and navigation system design, satellite navigation receiver, integrated navigation systems design (gps-ins), high resolution high accuracy analog to digital converter design. Optimal estimation and control. Neural networks and fuzzy logic.

Adjunct Professors

Sam K Zachariah
M.Tech. (IIT, Bombay)

| Autonomous locomotion control of biped humanoid robot. Nonlinear mathematical modeling, compensator design and simulation of electro mechanical and electro hydraulic servo actuation systems and components. Digital autopilot design of launch vehicles and realization of mechatronic systems.

Associate Professors

Basudeb Ghosh
PhD (IIT, Roorkee)

| Computational electromagnetics, fractal , waveguide passive components, aperture antennas, Frequency Selective Surfaces (FSS), Electromagnetic Band Gap (EBG) structures, Substrate Integrated Waveguide (SIW).

Chinmoy Saha
PhD (University of Calcutta)

| Multifunctional UWB Antennas/Reconfigurable Antennas. Antennas for SDR and CDR Applications. Dielectric resonator based WPT system.

Deepak Mishra
PhD (IIT, Kanpur)

| Computer vision and graphics, image processing, deep learning and artificial neural networks, biometrics, machine

	learning, soft computing, computational neuroscience, nonlinear dynamics.
Gorti R K S S Manyam# PhD (IIT, Madras)	Development of signal tracking approaches, computer vision, pattern recognition & machine learning, deep learning, visual tracking, image restoration, stochastic assimilation and compressive sensing algorithms.
Lakshmi Narayanan R PhD (IIT, Madras)	Estimation, detection and signal processing algorithms.
Palash Kumar Basu PhD (Jadavpur University, Kolkata)	Nanotechnology based Gas Sensor, THz devices, biosensor and flexible electronics.
H Priyadarshnam PhD (IIT, Bombay)	Design, modeling and development of satellite systems and control systems.
Rajeevan Puthan Purayil PhD (IISc, Bangalore)	Power electronics – power converters – topologies and PWM techniques, control of multiphase drives, power quality, and renewable energy.
Rajesh Joseph Abraham PhD (IIT, Kharagpur)	Control systems and applications. Power systems control guidance and navigational control. Robust control and applications.
Seena V PhD (IIT, Bombay)	Micro/Nanoelectronics, MEMS and sensors, polymer MEMS.
Selvaganesan N PhD (Anna University, Chennai)	System identification and adaptive control, fractional order control, fault detection and diagnosis.
Sheeba Rani J PhD (Anna University, Chennai)	Computer vision and pattern recognition, image analysis and understanding. Design and performance evaluation of hardware solutions for signal and image processing techniques.

Assistant Professors

Anindya Dasgupta
PhD (IIT, Kanpur)

Modelling and control of power electronic (PE) converters, PE topologies and applications in distributed generation.

Anoop C S
PhD (IIT, Madras)

Measurements and instrumentation, interface electronics, direct-digitizers, analog signal processing, biomedical electronic systems.

Basudev Majumder*
PhD (IIT, Bombay)

Planar antenna and passive system design. Application of metamaterials and metasurfaces in antenna design. Reconfigurable antenna design.

Chris Prema S
PhD (IIST, Trivandrum)

Wideband spectrum sensing in CR, Multirate signal processing. Sub-nyquist techniques for spectrum sensing, and FBMC systems for 5G communication.

Harsha Simha M S
PhD (IIT, Bombay)

Nonlinear dynamical systems and control.

Sooraj R
PhD (GIST, South Korea)

Semiconductor optoelectronics and photonics, optical sensors, semiconductor nano-structures, optical interconnects and integrated circuits, photovoltaics, plasmonics.

Sudharshan Kaarthik R
PhD (IISc, Bangalore)

Power electronics, multilevel converters, electric drives, modulation and switching techniques, power hardware in-the-loop emulation, grid connected systems, analog and digital circuit design.

Vineeth B S
PhD (IISc, Bangalore)

Applied probability & stochastic processes, stochastic control and optimization for computing and communication systems, queueing theory, machine learning, performance analysis and optimization.

Visiting Faculty

Sharath Chandra Varma B# PhD (IIT, Delhi)	Digital VLSI design and embedded systems
Naveen Kadayinti*# PhD (IIT, Bombay)	Wired and wireless communication circuits and mixed signal SoC design and test
Vani Devi M PhD (IIST, Trivandrum)	Signal processing in 5G communication, Massive MIMO channel estimation and decoding algorithm, NOMA – SCMA receiver design, MIMO-OFDM system, Error control coding – LDPC, TURBO decoder and real time RF communication in RTL-SDR.

Gotri R K S S Manyam relieved on 05/07/2017
Sharath Chandra Varma relieved on 12/05/2017
*# Naveen Kadayinti joined as visiting faculty on 15/01/2018 and relieved on 18/05/2018
* Basudev Majumder joined as assistant professor on 27/12/2017

Laboratory Facilities

A view of Power Electronics Laboratory

The department has excellent lab facilities and state-of-the-art software tools in various disciplines of electrical engineering, electronics and communications engineering, and computer science and engineering.

The department has moved to a new building during the year 2017-18. The following teaching and instructional laboratories have been moved to the new building or are in the process of being setup in the new building.

1. Analog Electronics Lab
2. Basic Electrical Lab
3. Basic Electronics Lab
4. Computer Networks Lab
5. Control System Lab
6. Digital Communication Lab
7. Digital Electronics Lab
8. Digital Signal Processing Lab
9. ECAD Lab
10. Instrumentation and Measurement Lab
11. Micro Processor Lab
12. Navigation Systems and Sensor Lab
13. Power Electronics Lab
14. RF and Microwave Lab
15. VLSI and Microsystem Lab & Micro/Nanosystem Characterization Lab

During the report period, the **Instrumentation and Measurement Lab** has been augmented with 30MHz dual channel arbitary function generator with pulse generator, 100MHz, 2 channel digital storage oscilloscope, Digital Multimeters with memory upgrade for data logging, NI my DAQ-University Kit, Triple DC Power Supply, Digital Storage Oscilloscope 200MHz, NI USB-6351, X Series DAQ, LCR Meter, and Gauss Meter.

Equipments and Instruments in Instrumentation and Measurement Lab

Students working in Instrumentation and Measurement Lab

The **Communication Systems Lab** has been augmented with Ettus Research USRP N210 during the report period.

Communication Systems Lab

The **Power Electronics Lab** has been augmented with the following equipment during the report period: 5 phase induction machine (2hp), reconfigurable split phase induction machine, reconfigurable split phase synchronous machine, reconfigurable split phase induction machine with DC dynamometer, electronic loads, 4 leg inverter modules, programmable DC power supplies, Solar PV modules, differential probes, and LCR meter.

Equipments and Machines Power Electronics Lab

Research & Development labs

Existing research and development are in the process of being shifted to the new building. New research labs are also being setup in the new department building. The following are the research and development labs.

1. Gas Sensor Lab

The main activity of this facility is to investigate low weight, high performance nanostructure based gas sensor array at room temperature where each element of the array will be functionalized by required nano materials (metal Oxide with catalyst) to enhance the performance of the sensor. The facility is equipped with gas calibration facility to calibrate different in-organic gases mainly H2, CH4, CO, CO2, NOx etc. along with equipment to synthesis nanomaterials for sensor. The state of the gas calibration system was reported in the previous year. In the report period, investigations into the performance enhancement of the sensor using nanomaterials were done. This system is generating different form of nanomaterials by different methods (Microwave Synthesis/Sol-Gel/Hydrothermal etc). The facility is capable to generate materials for Sensor application. During the report period, the facility has been used to achieve the following:

1. Successful demonstration of reliable Hydrogen sensor for IPRC, Mahendragiri.
2. Successful demonstration of reliable CH4, NO2 and CO2 sensor.
3. An attempt was made to realize the gas sensor in integrated platform.

The planned applications of the output of this lab are Low power and low cost Fuel leak detection (H2, CH4,NO2 etc) system, Low power and Low cost on line Pollution monitoring system, Low power and low cost Green House Gas emission system from agriculture soil, and Low power and low cost Exhale breathe analyzer for Cardio Vascular Diseases.

2. Computer Systems and Networks Lab

Systems and Networks Lab (SysNet Lab) is a research laboratory which focuses on the research activities in the broader area of networked systems as well as next generation computer netwworks. Major research areas include wireless multihop communication networks (e.g., Mobile Ad-hoc Networks (MANETs), Wireless Mesh Networks (WMNs), wiresless sensor networks (WSNs), Delay Tolerant Networks (DTNs), Software Defined Networks (SDNs), Internet of Things (IoT), complex networks, and graph signal processing.

Presently, SDN capability is also integrated with the mesh routers in order to analyze the finer level of network control. During the report period the Urban Delay Tolerant Network Simulator (UDTNSim v0. 1) was developed inhouse for DTN simulations.

3. CVVR (Computer Vision and Virtual Reality) Lab

The CVVR lab is funded from IIST. Department of avionics established the VR centre of excellence atIIST in the year 2012. Which later expanded in to CVVR lab hosting researchin areas related Computer vision, Virtual Reality and Machine learning.This lab is the integral part of newly proposed center of excellence data,vision and sciences. The lab is equipped with state of the art High End Computing Resources, Visualizations system, Camera systems, Virtual realityapplications and Interactive devices. The lab mainly focuses on developingsystems, and algorithms for computer vision.

4. MEMS & NanoFAB

Department of Avionics has established laboratories and research facilities in the area of Micro-Electro Mechanical Systems (MEMS) and Micro/Nanoelectronics. These laboratories were proposed to support the newly introduced Post Graduate programme VLSI and Microsystems in the year 2013 and Research activities in the areas ofmicro/nano electronics, micro electromechanical systems (MEMS/NEMS), devices and technologies. These laboratories would also support the R&D activities in the area of MEMS and Microsystems for ISRO also. As per the current plan, these laboratories and research facility would eventually be evolved as an R&D centre named NEMO Research Centre in the Department of Avionics to nurture research and technology development activities in the area of NEMS, Nano and Optoelectronics Devices, Technology and Systems.

2.3 Department of Chemistry

IN NUMBERS

08 Faculty Members
16 Research Scholars
02 Post Doctoral Fellows
13 M Tech Students
05 Laboratory/Technical Staff

Department of Chemistry undertake teaching in the undergraduate and postgraduate level where strong foundations are laid facilitating the design and development of novel materials and processes to meet future technological challenges. The department offers Chemistry courses (core as well as electives) for B.Tech programmes of the institute, M.Tech programme in Materials Science and Technology and PhD programs.

Faculty & Core Research Areas

Head of Department

Nirmala Rachel James
PhD (Pune University)

Step growth polymers, Polymers for medical applications, Hydrogels for tissue engineering. Nanofibers for biomedical applications, polysaccharide based nanomaterials for drug delivery applications, light emitting polymers, nanocomposites.

Senior Professor, Dean (Student Activities)

Kuruvilla Joseph
PhD (M G University, Kottayam)

Polymer nanocomposites for electronic and structural applications, Bio-nanosensors for biomedical applications, Elastomers and blends, Bio-composites.

Associate Professors

Gomathi N
PhD (IIT, Kharagpur)

Surface modification, nanomaterials, sensors.

Jobin Cyriac
PhD (IIT, Madras)

Chemical Sensors, Nanomaterials, Mass Spectrometry.

Prabhakaran K
PhD (University of Kerala)

High temperature materials, materials for environmental applications, ceramic powder processing

Sandhya K Y
PhD (University of Kerala)

Electrochemical Energy storage and sensing, photocatalysis, Adsorption-Removal of pollutants from water.

Sreejalekshmi K G
PhD (University of Kerala)

Computational and Synthetic Organic Chemistry.

Mary Gladis J
PhD (University of Kerala)

Energy storage materials.

Laboratory Facilities

Inorganic Chemistry Lab

Physical Chemistry Lab

Nano Science Lab

Department has developed laboratories for testing of nanomaterials, polymer processing and testing and processing of high temperature materials and organic synthesis.

During 2017-18, Metal/organic thin film deposition set up (7 lakhs), OLED characterization system (7.5 lakhs), Centrifuges (6.4 lakhs), Flash column chromatography unit (12.5 lakhs), electrochemical workstation (18.5 lakhs), battery fabrication unit (11.5 lakhs) and battery testing unit (5 lakhs) were added to the facilities in the department.

2.4. Department of Earth and Space Sciences

IN NUMBERS

13 Faculty Members
29 Research Scholars
01 Post Doctoral Fellows
26 M Tech Students
13 Dual Degree
03 Laboratory/Technical Staff

The department is inter-disciplinary in nature, bridging gaps between technology and its application to fundamental research areas in physical sciences. The faculty of the departmentcarry out research in four broad areas: (i) Astronomy & Astrophysics, (ii) Atmospheric Sciences, (iii) Geology and (iv) Remote Sensing. It offered an undergraduate program in Physical Sciences till 2017 (this has now been restructured into a dual degree program). It also offers post-graduate programs in Earth System Science, Geoinformatics and Astronomy & Astrophysics. In addition, PhD programs are offered are in the main areas of research, namely, Astronomy & Astrophysics, Atmospheric Sciences, Geology and Remote Sensing.

Faculty & Core Research Areas

Head of Department

Anandmayee Tej
PhD (Gujarat University)
| Massive star formation.

Outstanding Professor, Dean (Academics) and Registrar

A Chandrasekar
PhD (IISc, Bangalore)
| Data Assimilation in Atmospheric Sciences.

Associate Professors

Anand Narayanan
Ph D (Pennsylvania State University, USA)
| Intergalactic medium and galaxy halos.

Gnanappazham L
PhD (University of Madras)
| Remote sensing and GIS applications for Coastal wetlands.

Jagadheep D
PhD (Cornell University, USA)
| Massive star formation, astrophysical masers.

Rajesh V J
PhD (Yokohama National University, Japan)
| Mineralogy, Igneous Petrology, Geochronology & Planetary Geology

Rama Rao Nidamanuri
PhD (IIT, Roorkee)
| Hyperspectral and LiDAR remote sensing.

Resmi L
PhD (IISc, Bangalore)
| High energy astrophysics, gamma ray bursts.

Samir Mandal PhD (Jadavpur University, Kolkata)	High Energy Astrophysics.
Sarita Vig PhD (TIFR, Mumbai)	Massive Star Formation, Globular Clusters

Assistant Professors

Govindan Kutty M PhD (IIT, Kharagpur)	Atmospheric Modelling, Data Assimilation, Ensemble-based Predictability.
A M Ramiya PhD (IIST, Valiamala)	Developing algorithms and methodologies related to automated processing of LiDAR point cloud and very high resolution images for various applications related to natural and man-made resource management.

DST Inspire Faculty

Ambili K M PhD (University of Kerala) #	Ionosphere

Ambili K M relieved on 02/04/2017

Laboratory Facilities

Geology Lab

Astronomy & Astrophysics Lab

The department has developed various facilities across sub-disciplines for research and Under Graduate / Masters courses.

Atmospheric Science Lab

Atmospheric science lab has standard meteorological instruments to monitor wind speed & direction, air temperature, relative humidity, pressure, rainfall, soil

temperature & moisture; Computer lab in the department for weather data processing and analysis; Planetary Boundary Layer Laboratory with a wide variety of field instrumentation; Cloud-aerosol interactions laboratory housing a cloud condensation nucleus counter and surface based cloud droplet probe; Solar radiation instruments for energy budget studies; Air pollution and climatology observatory.

Astronomy & Astrophysics Lab

This group has set up an experimental and computational lab along with the Astronomical Observatory. A CCD characterisation experiment set-up is routinely used for the UG and PG courses. In addition, the lab is equipped with a blackbody, infrared photometer and a spectrograph, used in teaching and outreach. The lab includes computing facilities for Astronomical Data Analysis and Computational Astrophysics courses. Two telescopes, a 14-inch Cassegrain and a 8-inch Newtonian, are housed in the Observatory. These are extensively used for teaching and outreach.

Geology Lab

The geology lab has a geological museum with good collection of rock samples, ore minerals, rock forming minerals, precious and semi-precious minerals, and various faunal and floral fossils. The lab also has variety of terrestrial analogue minerals and rocks to study the geological conditions and evolution of Moon and Mars. 3D models of various geomorphological features are also available to teach students about the basic geological concepts. The lab hosts an advanced petrologicaltrinocular microscope (Nikon Eclipse LV100 optical microscope) and a dedicated petrological microscope equipped with heating freezing stages for the fluid inclusion study. The research on planetary geosciences includes processing and interpretation of satellite data from Moon and Mars for terrain morphology and spectral characterization of various rocks and minerals to understand the evolutionary processes. The facilities required for carrying out the scientific studies on planetary data are available in the lab.

Remote Sensing Lab

Remote sensing lab is installed with updated set of remote sensing and image processing software for multispectral, hyperspectral and LIDAR data of field/ air/ space borne data and and GIS softwares for 3D geospatial data analysis. Good amount of satellite data archive is available as repository which is also used for the regular lab sessions, internships and projects of B. Tech and M Tech students. Further research activities on various fields of geospatial technology are supported by necessary field data collection equipments such as spectro-radiometer, Plant canopy analyser, Differential Global Positioning System, hyperspectral imager,Terrestrial Laser Scanner etc. benefiting the research scholars.

2.5 Department of Humanities

IN NUMBERS

05 Faculty Members
12 Research Scholars
01 Laboratory/Technical Staff

The Humanities department plays a unique and distinctive role in IIST where the ethos of science and technology prevails. The department tries to bring in an holistic education that necessitates the study of the language, management and social sciences so that the application of the sciences for the improvement of the quality of life is aware of humanitarian and social concerns. In addition to the carefully designed undergraduate programs (core as well as electives), the department offers opportunities and facilities for the pursuit of research in Economics, English, Management and Sociology.

Faculty & Core Research Areas

Head of Department

Ravi. V
PhD (IIT, Delhi)
| Operations and Supply Chain Management.

Associate Professors

Lekshmi V Nair
PhD (University of Kerala)
| Science, Technology and Society.

Assistant Professors

Babitha Justin
PhD (University of Hyderabad)
| Travel and Writing.

Gigy J Alex
PhD (M G University, Kottayam)
| Cultural Studies.

Shaijumon C S
PhD (University of Kerala)
| Economics.

Laboratory Facilities

Audio Visual Lab

Department of Humanities offers a course in Communication Skills which uses both theory and practical classes for learning and teaching language in one semester so as to equip students of engineering and technology with effective communication skills in English.

Last year lab practices were divided into two categories as "English Language Lab" where listening comprehension, reading comprehension and vocabulary and speaking tests were conducted, and "Career Lab" where writing tests on Resume/Report preparation and Letter writing were conducted. The students were also given training in presentation, Group Discussion and interview skills.

Audio Visual Lab

The Audio Visual Lab is intended to be utilized for creating audio and video modules, study materials, to create content generation for lectures (both online and offline), documentaries, etc, by the faculty members, the students and the administrative fraternity of the Institute. Last year the studio has been utilized for conducting sessions to enhance communication skills, create content and materials development and for recording of Interviews, talks of Dignitaries, etc.

2.6 Department of Mathematics

IN NUMBERS

11 Faculty Members
14 Research Scholars
11 M Tech Students
03 Laboratory/Technical Staff

Department of Mathematics offers courses at undergraduate and post graduate level for Aerospace and Avionics Engineering branches. Department also runs an M.Tech programme in Machine Learning and Computing. Research in the department mainly focus on various areas of pure as well as applied mathematics including: Control Theory, Numerical analysis, Partial Differential Equations, Commutative Algebra, Machine Learning, Differential Geometry, Stochastic Modelling & Analysis, Queuing Theory and Time Series Analysis etc. Faculty members have strong research collaboration with reputed Indian institutions such as IITs and IISc etc. and international institutions include: University of Oxford, UK, University of Concepcion, Chile and University of Bio-Bio, Chile. Moreover, department is also actively engaged in other activities like organizing training/nurture programme in mathematics for undergraduate/postgraduate students as well as seminars/workshops by renowned scientist from various parts of the world.

Faculty & Core Research Areas

Head of Department

Subrahamanian Moosath K S
PhD (University of Hyderabad)
| Differential Geometry and Applications.

Senior Professor, Dean (Research& Development and Students Welfare)

Raju K George
PhD (IIT, Bombay)
| Mathematical Theory of Control, Machine Learning, Intrustrial Mathematics

Professors

Anilkumar C V
PhD (CUSAT)
| Nonlinear Dynamics and Chaos, Time series Analysis.

Sabu N
PhD (University of Madras)
| Partial Differential Equations, Homogenization.

Associate Professors

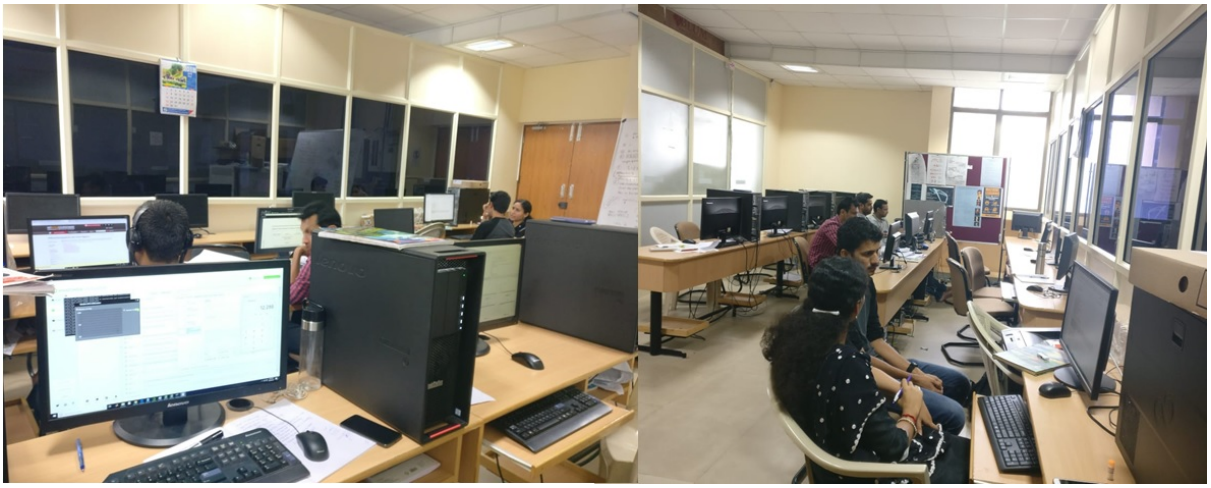
Deepak T G PhD (CUSAT)	Probability theory and Stochastic processes.
Kaushik Mukherjee PhD (IIT, Guwahati)	Numerical Analysis of Singularly Perturbed Differential Equations.
Prosenjit Das PhD (Indian Statistical Institute, West Bengal)	Commutative Algebra and its applications to Affine Algebraic.
Sarvesh Kumar PhD (IIT, Bombay)	Computational Partial differential equations, finite element methods, finite volume methods, virtual element methods.
Natarajan E PhD (IIT, Madras)	Numerical analysis.
Sumitra S PhD (Sheffield University, England)	Machine Learning, Data Mining.

Assistant Professors

Sakthivel K PhD (Bharathiar University, Coimbatore)	Control and Inverse Problems of Partial Differential Equations

Laboratory Facilities

Programming Lab



Soft Computing Lab

The following laboratory facilities are available to support the teaching programme for the undergraduate students of IIST and the M.Tech students of the department of Mathematics, IIST.

- Programming Lab
- M.Tech Softcomputing Lab

The detailed information about the above mentioned Labs are furnished below:

Programming Lab

- 50 Desktop Computers with Internet facility.
- Dual Operating Systems (Windows and Linux).
- C, C++, MATLAB courses.

Soft Computing Lab

- 10 Desktop Computers with Internet Facility.
- 4 High-end Workstations, 8 Core Xeon Processor with 80 GB RAM, 2.4 Ghz Speed, 20MB Cache, NVIDIA Quadro K4200 Graphics and 24 inch LED Monitor.
- Artificial Neural Networks, Pattern recognition and Machine Learning, Modelling and Simulation Lab courses.

2.7 Department of Physics

IN NUMBERS

13 Faculty Members
22 Research Scholars
11 M Tech Students
08 Laboratory/Technical Staff

The Department of Physics offers a five-year dual-degree programme where the students receive a B.Tech. in Engineering Physics and a Master of Science in Solid State Physics or Master of Technology in Optical Engineering. The department also offers independent M. Tech. programmes in Solid State Technology and in Optical Engineering. The members of the department are actively involved in research in diverse areas of phyiscs, which is supported by a flourishing Ph. D. programme.

Faculty & Core Research Areas

Head of Department

Murugesh S | Nonlinear dynamics: Integrable systems and solitons. Applications to spintronics.
PhD (Institute of Mathematical Sciences, Chennai)

Senior Professor

Narayanamurthy C S | Applied and Adaptive Optics.
PhD (IIT, Madras)

Associate Professors

Apoorva Nagar | Nonequilibrium Statistical Mechanics and Biological Physics.
PhD (Tata Institute of Fundamental Research, Mumbai)

Jinesh K B | Semiconductor and device physics.
PhD (University of Twente, Netherlands)
PhD (Leiden University, Netherlands)

Rakesh Kumar Singh | Singular optics, Tight focusing, Correlation based coherence and polarization imaging.
PhD (IIT, Delhi)

Solomon Ivan J | Classical Optics, Quantum Optics, Quantum Information.
PhD (Institute of Mathematical Sciences, Chennai)

Sudheesh Chethil PhD (IIT, Madras)	Quantum Information, Quantum Optics and Nonlinear Dynamics.
Umesh R Kadhane PhD (Tata Institute of Fundamental Research, Mumbai)	Atomic and Molecular Physics.

Assistant Professors

Dinesh N Naik PhD (The University of Electro-Communication, Tokyo)	Spectrally resolved incoherent holography for space based imaging.
Jayanthi S PhD (IISc, Bangalore)	Nuclear Magnetic Resonance, pulse sequence development and applications.
Kuntala Bhattacharjee PhD (Institute of Physics, Bhubaneshwar)	Experimental condensed matter physics.
Naveen Surendran PhD (Institute of Mathematical Sciences, Chennai)	Condensed matter theory.
Sourin Mukhopadhyay PhD (Tata Institute of Fundamental Research, Mumbai)	Spectroscopic studies on correlated electrons systems.

Laboratory Facilities

Atomic and Molecular Physics Lab

Modern Physics Lab

Applied and Adaptive Optics Lab

Electronic Materials and Devices Lab

The following laboratories with state-of-the-art facilities support the research and teaching programmes of the department.

- Applied and Adaptive Optics
- Atomic and Molecular Physics
- Computational Physics
- Electronic Materials and Devices
- General Physics
- Lasers and Photonics
- Modern Physics
- Optics
- Solid State Technology

ACADEMIC PROGRAMMES

3 . ACADEMIC PROGRAMMES

This Chapter presents details related to academic programmes, comprising of the courses offered at UG, PG and doctoral levels, student enrolment, internships, passout, degrees awarded in convocation and student placements. The institute continued to offer three undergraduate, fifteen past-graduate programmes and full-ltime and part-time PhD programmes. Based on Academic Council decisions, BOM approval as well as AICTE approval process, the undergraduate program BTech (Avionics) is renamed as BTech, Electronics and Communication Engineering with specialization in Avionics. The undergraduate program comprises of BTech in Aerospace Engineering and BTech in ECE(Avionics), each with 60 seats annually and a dual degree program with BTech in Engineering Physics with 20 seats. Students of the Dual degree programme spend an additional Fifth year to acquire either Master of Technology degree in Optical Engineering or Earth System Sciences, or Master of Sciences in Astronomy or Astrophysics, or Solid State Physics.

3.1 Admission

The following are the enrolment details of the undergraduate programs offered by the institute and for the year 2017-18

UG Programme	General	OBC	SC	ST	PD General	PD OBC
Aerospace Engineering	30	16	9	5	0	0
Avionics	29	15	9	5	1	1
Dual Degree	10	5	3	2	0	

The Institute currently offers 15 Master of Technology/Master of Science programs. Admissions to the programs are based on the performance in national level examinations such as GATE or JEST, followed by an interview. Category-wise details of students admitted during the report period across various M.Tech and Master of Science Programmes of IIST are as follows:

Admission 2017-2018							
Sl.No.	Name of the M.Tech. and Master of Science Programme	Gen	OBC	SC	ST	Sponsored from DOS/ISRO	Total
1	Thermal and Propulsion	3	2	1	-	2	8
2	Aerodynamics and Flight Mechanics	3	2	1	-	1	7
3	Structures and Design	3	1	1	1	2	8

4	RF and Microwave Engineering	4	-	1	-	-	5
5	Digital Signal Processing	2	1	-	-	-	3
6	VLSI and Microsystems	3	2	1	-	2	8
7	Control Systems	3	2	-	-	-	5
8	Power Electronics	3	2	1	-	-	6
9	Machine Learning and Computing	3	1	1	-	1	6
10	Materials Science and Technology	3	1	1	-	2	7
11	Earth System Sciences	2	2	-	-	-	4
12	Geoinformatics	4	1	1	-	-	6
13	Astronomy and Astrophysics	1	1	-	-	1	3
14	Optical Engineering	2	2	-	-	-	4
15	Solid State Technology	-	-	-	-	-	0
Total		**39**	**20**	**9**	**1**	**11**	**80**

Doctoral Programmes

In order to enhance research output, the institute continues to strengthen PhD programme. Admissions were held in January and July based on test and interview and is restricted to those candidates who qualified GATE/UGC/CSIR NET-JRF/JEST or equivalent exams. During this period, 38 students registered for PhD, the details of which are given below:

Department	Full Time	Part Time	Total
Aerospace Engineering	4	3	7
Avionics	5	4	8
Chemistry	1	2	3
Earth and Space Sciences	9	-	8
Humanities	1	-	0
Mathematics	2	-	2
Physics	7	-	7
Total	**29**	**9**	**38**

3.2 Successful Completion Details of academic programs

151 BTech students and 83 MTech students passed out in the year 2017-18

3.2.1 B.Tech

Degree	Discipline	Number of Students Passed out
Bachelor of Technology	Aerospace Engineering	54
	Avionics	62
	Physical Science	35

3.2.2 M.Tech/Master of Science

Degree	Discipline	Number of Students Passed out
Master of Technology	Aerodynamics and Flight Mechanics	7
	Structure and Design	9
	Thermal and Propulsion	9
	Control Systems	5
	Digital Signal Processing	5
	RF and Microwave Engineering	5
	VLSI and Microsystems	9
	Material Sciences and Technology	6
	Earth System Sciences	3
	Geoinformatics	5
	Machine Learning and Computing	4
	Optical Engineering	5
	Solid State Technology	5
Master of Science	Astronomy and Astrophysics	6
Total		**83**

3.2.3 Ph.D Thesis accepted/ published (11)

11 students had completed their open defence successfully in the yaer 2017-18.

- **Student: Smt. S. Chris Prema**
  Thesis: 'Wideband Spectrum Sensing in Cognitive Radio using Uniform and Non-Uniform Filter Banks'
  (Guide: Dr. K S Dasgupta Date of Defence: 24th April, 2017)

- **Student: Shri. Mathiazhagan S**
  Thesis: 'Atomistic Simulations on the Mechanical Behavior of Bio-inspired Brittle Matrix Nanocomposites
  (Guide: Dr. Anup S Date of Defence: 16th June, 2017)

- **Student: Kum. Mahima Singh**
  Thesis: 'Spectral and chemical characterization of hydrous sulphate-phyllosilicate association and banded iron formation in India: Probable implications for Mars'
  (Guide: Dr. Rajesh V J Date of Defence: 28th June, 2017)

- **Student: Smt. Dhanya S Pankaj**
  Thesis: ''Improved Algorithms for Automatic Registration of 3D Point Clouds'
  (Guide: Dr. Ramarao Nidamanuri Date of Defence: 25th August 2017)

- **Student: Smt. Deepthi L Sivadas**
  Thesis: 'Studies on Carbohydrate Derived Sorbents for Carbon Dioxide Removal
  (Guide: Prof. (Dr.) K N Ninan, Dr K Prabhakaran and Dr. R Rajeev Date of Defence: 21st September, 2017

- **Student: Shri. Rajesh R**
  Thesis: ''Study of Select Issues of Resilient Supply Chains'
  (Guide: Dr.V Ravi Date of Defence: 15th November, 2017)

- **Student: Shri. Sujith Vijayan**
  Thesis: 'Investigations on Novel Processing Methods for Ceramic Foams'
  (Guide: Dr. K Prabhakaran Date of Defence: 17thNovember, 2017)

- **Student: Shri. Gopakumar G**
  Thesis: 'Automatic Feature Extraction and Classification of Cell Images for Cytopathology'
  Guide: Dr. Gorthi R K Sai Subrahmanyam Date of Defence: 18th December, 2017)

- **Student: Smt. Sajitha G**
  Thesis: 'Methods for eliminating the limit cycle oscillation due to low resolution ADC/DPWM in digitally controlled DC-DC converters'
  (Guide: Dr. Thomas Kurian Date of Defence: 12th January, 2018)

- **Student: Shri. Najeeb P K**
  Thesis: Statistical and Non-Statistical Processes in Polycyclic Aromatic Hydrocarbons and their Derivatives under Charged Particle Interaction'
  (Guide: Dr. Umesh R Kadhane Date of Defence: 16th February 2018)

- **Student: Smt. M Vanidevi**
  Thesis: 'Weighted Nuclear Norm Minimization Method for Massive MIMO Low-Rank Channel Estimation Problem'
  (Guide: Dr. N Selvaganesan Date of Defence: 2nd March, 2018)

3.3 Convocation

The fifth convocation of IIST was conducted on September 14, 2017 at Dr. Srinivasan Auditorium, VSSC. The Chief guest of the day was Dr. Shailesh Nayak, former Secretary to the Government of India for Ministry of Earth Sciences (MoES) and was presided over by Shri A S Kirankumar, President of Governing Body,IIST. Degrees were awarded to 151 BTech graduates, 83 MTech and 11 PhD degree recipients. Institute medals were given to the best academic performer, to the toppers of the three braches of BTech and for the best outgoing student.

Mr. Avinash Chandra
B.Tech (Aerospace Engineering)

Chairman, Board of Management's Gold Medal Best Academic Performer and Institute Gold Medal Topper

Mr. Mustafa Shahid
B.Tech (Avionics)

Director's Gold Medal
Best All Rounder

Mr. Jiljo K Moncy
B.Tech (Avionics)

Institute Gold Medal Topper

Ms. Netra S Pillai
B.Tech (Physical Sciences)

Institute Gold Medal Topper

3.4 Placement

All students who have completed their BTech programme in IIST with a CGPA of 7.5 are absorbed in the different centres of ISRO. Other BTech and MTech students are placed through the placement of IIST.

3.4.1 ISRO Placement for BTech

Out of successful BTech students, 104 (out of 151 conferred degrees) were offered placement in ISRO in 2017.

ISRO/ DoS absorption data (2011-2017)

Year	AE	AV	PS	Total
2011	41	54	22	117
2012	42	52	30	124
2013	39	54	29	122
2014	35	43	26	104
2015	44	45	13	102
2016	43	39	21	103
2017	39	42	23	104
Total	**283**	**329**	**164**	**776**

3.4.2 Non-ISRO Placement for UG, PG & Others

List of Students placed Through IIST Placement cell

B.Tech Batch (2014-2018) and M.Tech Batch (2016-2018)

Sl. No.	Name of the Student	Course	Company
		B.Tech	
1	Danish Mohammed.S	Avionics	M/s Finisar Technology
2	B Venkata Hemambhar	Avionics	M/s Finisar Technology
3	Manasvi Bhatt	Avionics	M/s Viasat
4	Shaifalee Saxena	Aerospace Engineering	M/s Tata Advance Systems
5	P. Nikhil Mahesh Kumar	Avionics	M/s Tata Advance Systems
6	Rahul Kumar	Avionics	M/s Tata Advance Systems
7	Srijith K	Avionics	M/s Tata Advance Systems
8	Amar Deep Jyoti	Aerospace Engineering	M/s Agnikul Cosmos
9	Ch. Mallikarjuna	Avionics	M/s Agnikul Cosmos
		M.Tech	
10	Rahul Vashisht	Machine Learning and Computing	M/s Flytxt Mobile
11	Nasibullah	Machine Learning and Computing	M/s Flytxt Mobile
12	Anjana C	VLSI and Microsystems	M/s INTEL Technology
13	Saranya BT	VLSI and Microsystems	M/s INTEL Technology
14	Bharatendu Thakur	Machine Learning and Computing	M/s Mercedes Benz
15	Swetha VC	Digital Signal Processing	M/s Mercedes Benz
16	Saranya S	Control System	M/s Mercedes Benz
17	Ayisha	RF and Microwave Engineering	M/s Mercedes Benz
18	Athira G S	Power Electronics	M/s Delta Electronics
19	Sumit Kumar Singh	Machine Learning and Computing	M/s Tata Consultancy Service
20	Tunikipati Sai Meghana	Optical Engineering	M/s System Control
21	Gollangi Yeerannaidu	Optical Engineering	M/s System Control
22	E Lekshmi	Optical Engineering	M/s System Control
23	Sneha S	Control System	M/s Continental Automotives
23	Abhishek Singh	Control System	M/s Continental Automotives
25	Mithun P V	VLSI and Microsystems	M/s INTEL Technology
26	Muddu Manohar	VLSI and Microsystems	M/s INTEL Technology
27	Neeraj Tiwari	Digital Signal Processing	M/s ZF India Pvt Ltd
28	Prajith Kumar	Thermal and Propulsion	M/s Team Indus
29	Kesav Unnithan	Geoinformatics	M/s Satsure
30	BalKrishan	Aerodynamics and Flight Mechanics	M/s Agnikul Cosmos

RESEARCH & DEVELOPMENTS


KEMPPI
KEMPPI
KEMPPI

4. RESEARCH & DEVELOPMENT

Research & development in various areas of space science, space technology and its applications as well as related areas of basic science and relevant humanities topics is undertaken at IIST through its faculty, visiting researchers and collaborators, post-doctoral fellows and project-funded junior research fellows and project engineers. The R&D ecosystem is strongly supported by PhD scholars as well as PG and UG students in their project/internship semesters. While majority of research is funded from the institute, faculty are encouraged to obtain competitive research grants from funding agencies as well as consultancy project funds from ISRO and other industries. This is managed under Dean (R&D) through a institute level Research Council.

During its eleven years of growth, IIST has developed good number of research laboratories, and centers of excellence. IIST constantly enhances its research facilities, by procuring and developing several innovative and ground breaking technologies. Research scholars and teachers are actively involved in research, and this is evident in the increase in number of patents, publications and in their research output. To nurture a research culture among students and teachers, it provides financial support to participate in conferences, workshops, and seminars.

4.1 Research Projects

IIST support the research of its faculty members through various schemes such as Fast Track projects for newly joined faculty, IIST Projects and IIST-ISRO Projects, coordinated by IIST Research Council headed by Dean (R&D) and Advanced Space Technology Development Cell (ASTDC). The faculty members are also working on projects funded by other external funding agencies such as DST, CSIR and UGC. Currently, 82 research projects are in progress in IIST.

IIST Projects

Sl. No	Name of the Project	Investigators
1.	Development of desktop type FDM based multi-jet 3D polymer printing system and allied research	Dr. V. S. Sooraj, Dr. Praveen, Mr. Pradeep
2.	Development of experimental rover and investigation of mobility and approaches for local and global motion planning on uneven terrain	Dr. K. Kurien Issac

3.	Experimental investigation of laminar burning velocity premixed ISROSENE/ AIR/ OXYGEN mixtures using freely expanding spherical flames	**Dr. C. Prathap**
4.	Experimental and Numerical study of stationary flat flames	**Dr. C. Prathap**
5.	Studies on Crack propagation in composites by Micro Raman spectroscopy	**Dr. S. Anup**
6.	Performance characterization and development of numerical model for Cavitating Venturi	**Dr. Pradeep Kumar P**
7.	Structural Reliability of thin Cylindrical and Spherical shells used for Aerospace Structures	**Dr. Arun C. O**
8.	Studies on secondary injection to an expanding supersonic cross flow	**Dr. Rajesh Sadanandan**
9.	Modelling and Development of N2O4(Oxidant used in rocket engines)Scrubber system	**Dr. A Salih, Dr. K Prabhakaran, Dr. Kuruvila Joseph**
10.	Assessment of machining characteristics of ablative materials	**Dr. Chakravarthy, Dr. V. S. Sooraj,** Mr. Mohankumar (VSSC)
11.	Latent and Sensible heat thermal storage system for medium and high temperature CSP applications	**Dr. Manu K V**
12.	Mixing Enhancement in Supersonic Combustors Using Pylon-Cavity Flame Holder	**Dr. Rajesh Sadanandan**
13.	Influence of Compressibility and Stream wise Pressure gradient on Filim cooling performance	**Dr. Shine S R,** Mr. J C Pisharady
14.	High- Speed unsteady flow past spiked blunt bodies	**Dr. Manoj T. Nair**
15.	Investigation of wavy micro channel flow with nano fluids	**Dr. Shine S R, Dr. V S Sooraj , Dr. Rajesh S,** Mr. Deepak Kumar Agarwal
16.	Rocket Injector spray studies	**Dr. V. Aravind**
17.	Laser sheet droplet sizing for spray studies	**Dr. V. Aravind**
18.	Study of Soft Switching Topologies and Control schemes for Isolated DC-DC Converters	**Dr. Anindya Dasgupta**
19.	Reluctance-Hall Effect Based Through-shaft Angular Position Sensors – Finite Element Studies and Development	**Dr. Anoop C.S**

20.	Triband (S/X/Ka) Monopulse Auto Tracking Feed for LEO satellites (IIST-ISRO Project)	**Dr. Basudeb Ghosh, Dr. Chinmoy Saha,** T Naga Sekhar, G Baig & Sandip Sankar Roy (NRSC)
21.	Design and Implementation of a Compact Wideband Microstrip Patch Antenna	**Dr. Chinmoy Saha,** Mr. Mukundan, VSSC
22.	Design and implementation of integrated tri-band monopulse auto-tracking feed for remote sensing satellite communications	**Dr. Chinmoy Saha Dr. Basudeb Ghosh** T Naga Sekhar, G Baig (NRSC)
23.	High Resolution Multispectral Image Analysis for Landslide Detection	Deepak Mishra, Tapas R Martha, **Dr. RamaRao N**
24.	Development of Virtual Reality Model for Disaster Simulation.	**Dr. Deepak Mishra,** Sashidhar Reddy
25.	Development and Analysis of Image Fusion Techniques for Satellite Images	**Dr. Deepak Mishra Dr. Sarvesh Kumar**
26.	Development of control schemes for Multiphase Dual Converter fed open-end winding BLDC/ induction motor drives.	**Dr. Rajeevan P. P**
27.	Possibility of finding graphene as THz Detector materials for space application.	**Dr. Palash Kumar Basu**
28.	Design and Fabrication of Graphene based RF Transistor (completed)	**Dr. Palash Kumar Basu**
29.	Investigating the Nanomaterial Based Exosome Sensor for Cancer Prognostic: An Approach towards Liquid Biopsy for Cancer	**Dr. Palash Kumar Basu**
30.	Development of MEMS Accelerometer with Ultra-Sensitive Transductions for Space Applications	**Dr. Seena V**
31.	Development of Polymer MEMS piezoresistive accelerometer *Cost of fabrication at Nanofabrication facility, CEN IIT B is sponsored by Meity, Govt of India	**Dr. Seena V**
32.	Modelling and controller design for micro actuators Completed	**Dr. N. Selvaganesan,** D.Venkittaraman, Raji George & Rajesh Ravi (LPSC)
33.	Design and development of brushless DC motor On going	**Dr. N.Selvaganesan** M.N. Namboothiripad, Pradeep Kumar (VSSC)

34.	Flash ADC Design- IIST-SCL collaboration Project	**Dr. J. Sheeba Rani**
35.	ASIC Design-SAR ADC- IIST-SCL Collaboration Project	**Dr. J. Sheeba Rani**
36.	NAVIC Receiver sponsored by MeiTY collaboration with Sameer, IIT-Jodhpur, IIT-Bombay, IIT-Madras	**Dr. J. Sheeba Rani**
37.	Decoupled Control Scheme for Dual Permanent Magnet Machine Actuators	**Dr. R.Sudharshan Kaarthik**
38.	Development of rapid network stack development tools for internet of things operating systems (IIST Fasttrack)	**Dr. Vineeth B. S.**
39.	Supersonic conductor as electrolytes for Al solid state lithium sulphur batteries	**Dr. J Mary Gladis** Dr Manuel Stephen (CECRI Karaikudi)
40.	Flexible wiping substrate for SERS detection of explosives	**Dr. Jobin Cyriac** Dr. Benny K George & Bhuvaneswari (VSSC)
41.	Silicone Graphene based composite as anode materials for lithium battery cells	**Dr. K Y Sandhya** Dr. S A Ilangovan & S Sujatha (VSSC)
42.	Intrinsically conducting polymide composites with CNT or graphene having electrostatic charge mitigating characteristics for space applications	**Dr. Kuruvilla Joseph** Dr. Murali Krishnan & Dr. R S Rajeev (VSSC)
43.	Plasma functionalized CNT-Polymer Nano composites for satellite structural applications	**Dr.Gomathi N** **Dr. Kuruvilla Joseph** Dr. Gouri (VSSC)
44.	N-doped carbon-sulphur composites based cathode materials for advanced lithium sulphur batteries	**Dr. J Mary Gladis** Dr. S A Ilangovan & Dr. Gouri & S Sujatha (VSSC)
45.	Study of Silicon polymer nanofibre as anode material for lithium batteries	**Dr. K Y Sandhya** **Dr. Nirmala R James** Dr. S A Ilangovan & S Sujatha (VSSC)
46.	Ceramic forms by emulsion casting	**Dr. K Prabhakaran** Dr. P V Prabhakaran & Dr. R Sreeja (VSSC)
47.	Ion/Molecular mediated supramolecular polymers in organic/aqueous medium	Dr. Roymon Joseph **Dr. Kuruvilla Joseph**
48.	Biowaste Derived Nitrogen-Rich Hierarchically Porous Carbon Aerogels: Attractive Material for CO_2 Adsorption and Supercapacitor Electrodes	Dr. Linsha Vazhayal **Dr. K Prabhakaran**

49.	Geological and spectral studies of terrestrial analogue rocks: Implications for Mars exploration (IIST Project-completed).	**Dr. Rajesh V J**
50.	Study of Moon and Mars analogues: Investigations on orthopyroxene-olivine-spinel (OOS) group of minerals and cumulate rocks in India based on remote sensing, mineralogical and geochemical methods.(SAC-ISRO Project- ongoing).	**Dr. Rajesh V J**
51.	Spectral characterization and morphology of olivine-pyroxene-spinel bearing lithologies on Moon; implications for lunar endogenic processes (ISRO Chandrayaan-I AO Project- ongoing).	**Dr. Rajesh V J**
52.	A comprehensive study on crustal dichotomy and extensional tectonics in and aroung Valles Marineris, Mars (ISRO MOM-I AO Project- ongoing).	**Dr. Rajesh V J**
53.	Integrating air and space borne spectroscopy and laser scanning to assess structural and functional characteristics of crops and field margin vegetation (DBT Funded).	**Dr. Ramiya A M**
54.	Project on "Space Technology and its mediation into Socio- Economic Space of Households of India – I Phase South India".	**Dr. C S Shaijumon** **Dr. Lekshmi V Nair.**
55.	Assessment of the contributions made by IIST Alumni in ISRO programs.	**Dr. V Ravi** **Dr. Gigy J Alex**
56.	Laser speckle for small deformation measurement (ISRO-IIST Project (SAC Ahmedabad).	**Dr. Rakesh Kumar Singh,** SachinKumar Daksh (SAC)
57.	Laser Speckle for small Deformation measurement.	**Dr. Rakesh Kumar Singh**

ISRO Consultancy/Funded Projects

Sl. No.	Title	Investigators/ Funding Agency
1.	Spectral Characterization and morphology of Olivine-pyroxenespinel bearing lithologies on Moon: implications for lunar endogenic process.	**Dr. V. J. Rajesh** DOS
2.	A comprehensive study on crustal dichotomy and extensional tectonics in and around valles marineris, mars	**Dr. V. J. Rajesh** MOM-AO
3.	Study of Moon and Mars analogues: Investigations on orthopyroxene-olivine-spinel(OOS) group of minerals and cumulate rocks in India based on remote sensing, minerological and geochemical metals	**Dr. V. J. Rajesh** SAC
4.	Algebraic Multigrid method for solving sparse system	**Dr. E. Natarajan** **Dr. Sarvesh Kumar** VSSC
5.	Advanced Retarding Potential Analyzer for Martian Ionospheric Studies (ARIS)	**Dr. Ambili K. M.** SSPO/MOM
6.	Diagnostic system for testing 300MN SPT	Umesh R Kadhane LPSC
7.	Surface engineering techniques for improving the life performance of ball bearings in ISRO spacecraft mechanisms.	**Dr. Jinesh K. B.** IISU
8.	A Study on the effects of Ionospheric variabilities on the usability of NavIC/GAGAN using observations and models	**Dr. Priyadarshanam** SAC
9.	Development of Surface Discharge Sparkplugs	**Dr. Jinesh K. B.** LPSC
10.	Development of Laser Ignition Systems	**Dr. Jinesh K. B.** LPSC
11.	Development and Implementation of Diagnostic tools for High Thrust Electric Propulsion System	**Dr. Umesh R Kadhane** LPSC

Other External Funded Projects

Sl. No.	Title	Investigators Funding Agency
1.	To investigate the growth and the local electronic properties of two dimensional stanene on transition metal dichalcogenide (TMDC) and on topological insulator (TI) surface by LEED, STM and STS	**Dr. KuntalaBhattacharjee** UGC-DAE CSR
2.	Study of Dynamics induced by very small amounts of water molecules through Deuterium MAS solid state NMR and molecular dynamic simulation	**Dr. Jayanthi** DST
3.	Integrating air and space borne spectroscopy and laser scanning to assess structural and functional characteristics of crops and field margin vegetation	**Dr. N. Rama Rao, S.** Nautiyal ISEC
4.	Development of a standalone atmospheric correction module for hyper spectral data for indian context	**Dr. N. Rama Rao** DST
5.	Deep crustal processes during the evolution of archaean Nilgiri block, southern India	**Dr. Rajesh V J** MoES
6.	Generation and analysis of light source with un-conventional correlation structure.	**Dr. Rakesh Kumar Singh** SERB (DST)
7.	Investigation of Transition Metal Dichalcogenides based Thin filim transistors for Ultra Sensitive nanomechanical Bio/chemical Sensor.	**Dr. Seena V** SERB (DST)
8.	Development of PZT Ceramic Foams.	**Dr. K. Prabhakaran** DRDO
9.	Improving Operational forecast of SASE using four dimensional variational data assimilation technique	**Dr. Govindankutty** SASE (Snow and Avalanche Establishment)
10.	Desidn and Development of NavIC Receiver	**Dr. Priyadarshanam** SAMEER, Ministry of Electronics & Information Technology
11.	Physics of radio Bright Gamma Ray Burst After glows	**Dr. Resmi Lakshmi** SERB (DST)
12.	Max Planck Partner Group for Galactic Star Formation	**Dr. Jagadheep D.** Max Planck Institute for Radio Astronomy

13.	Investigating the Nanomaterial based Exosome Sensor for Cancer Prognostic: An Approach towards Liquid Biopsy for Cancer	**Dr. Palash Kumar Basu** Dept. Of Biotechnology, Ministry of Science and Technology
14.	Design and development of High Performance Hydrogen Sensor	Palash Kumar Basu IPRC

4.2 Centres of Excellences

Advanced Propulsion and Laser Diagnostics (APLD)

(Department of Aerospace Engineering)

As part of the ongoing research activities in academic year 2017-18, the following major studies were carried out:

- Pintle Injector Characterization for Throttleabe engines that could be used for lunar and Mars landing missions and also for stage recovery missions.
- Supercritical heat transfer characterization that mimicks the flow heat transfer in LOx-Methane Expander Cycle Engines
- Kerosene-Quantum dot nanofluid fuel for reduced ignition delay that can play vital role in ISRO's Scramjet mission with hydrocarbon based fuel
- Annular liquid film visualization for characterizing film cooling in thrust chambers; can lead to improvement in existing ISPs
- Development of IIST-Rocket Propulsion Code (IIST-RPC) for Thrust chamber performance analysis which is validated against the established codes of NASA CEA and RPA.
- Preliminary design of microthruster for AARest mission
- Extensive studies on Supersonic cavity flow field for noise suppression

The research activities carried out in the APLD lab contributed to three peer reviewed journal, two international conference and three national conference publications.

Computer Vision and Virtual Reality Lab (CVVR lab)

(Department of Avionics)

Computer Vision and Virtual Reality Lab (CVVR lab) carries out research in the area of image and signal processing, computer vision using machine learning tools & techniques, and virtual reality applications. Recent work includes proposing deep learning for object recognition and tracking, video summarization, image fusion, and tracking objects in a sequence of videos, content based retrieval and copy detection. The lab members had recently proposed a robust integrated tracker which is short

listed in VOT 2017 challenge as one of the best trackers and results will be published in ICCV conference 2017. Currently, two ISRO-IIST and one IIST research project are being carried out in the lab. The lab also works on bio-inspired computing and on various problems related to computational neuroscience & neuroinformatics. One MTech Project and one BTech project that carried out at this lab were shortlisted for presentation at INAE best project awards in 2017.

Centre of Advance Research in Nanoscience and Technology

(Department of Chemistry)

Department of Chemistry had established a Centre of Advance Research in Nanoscience and Technology in the year 2010. The research work under the facility currently focuses on the development of (i) Materials for energy storage and conversion (ii) Nanocomposites (iii) Nanobiomaterials and (iv) Chemical/bio sensors based on nanomaterials. Five IIST/ISRO projects were completed whereas six research projects are in various stages of progress with significant output. Altogether, 68 publications have appeared in international journals and 5 patent applications have been filed based on the research projects executed using the centre facilities. Specifically, projects in the area of materials for energy storage and conversion were successful in developing Si-nGraphene oxide coated electrode and different cathode materials for for Li –S batteries with cycle stability of 1000 mAh/g. In the area of nano composites, toughened epoxy with 170% improvement in fracture toughness &35% increase in the tensile properties was accomplished. Various chemical/biosensors for naked eye detection of cholesterol, creatinine in human blood, ascorbic acid, as well as for heavy metals and explosives have been developed.

4.3 New Facilities for research - Multidisciplinary Computing Center

IIST has procured two storage servers with eight 4TB hard each (total 64 TB) to set up the Multidisciplinary Computing Center in the Institute. It is a resource of high-performance computers, storage and know-how of computational science. The aim of the center is to become a centre of excellence in computational techniques and computer simulations for science and engineering and provide expertise in big Data Analysis, Climate Modelling, Computational Fluid Dynamics, Computational Structural Mechanics, Computation-Assisted Materials Science, Computer Vision and Virtual Reality, Machine Learning, Network Science and Engineering, Nonlinear Dynamics ,Optimisation, Geoinformatics, Monte Carlo Simulations.

4.4 Advanced Space Technology Development (ASTDC)

Advanced Space Technology Development Cell (ASTDC) has been established in IIST in October 2015 to develop and implement programs in planetary exploration, Earth science, space-based astronomy and technology development required by the various centres of ISRO, while applying its capabilities to technical and scientific problems of national significance. The ASTDC facilitates and monitors IIST-ISRO joint projects, and helps in identifying areas wherein different ISRO/DOS units and IIST could work together. Currently thirty two projects are in various stages of execution in IIST, in collaboration with several ISRO centres particularly, Semi Conductor Laboratory, Space Applications Centre, NRSC, ISAC, VSSC, IISU, LPSC and IPRC.

4.5 Post Doctoral Programme

The institute offers excellent facilities for the pursuit of post doctoral program as well. 6 students were enrolled for post doctoral research in 2017-18.

Department-wise enrolment and summary output

Sl. No.	NAME	Date of Joining	Dept.	Fellowship	Duration of fellowship
1.	Linza Vazhayal	07.04.2017	Chemistry	SERB (NPDF)	2 years
2.	Priyanka B	04.05.2017	Physics	SERB (NPDF)	2 years
3.	R Krishnasamy	05.06.2017	Mathematics	SERB (NPDF)	2 years
4.	Sandhya R S	03.07.2017	Humanities	ICSSR	Resigned on 16.02.2018
5.	Ishwar Kumar	23.08.2017	Earth and Space Sciences	SERB (NPDF)	Resigned on 08.01.2018
6.	Prescilla K	29.01.2018	Avionics	KSCSTE	2 years

4.6 Memorandum of Understanding

IIST has signed various MOU in three categories, namely (i) with various universities and research organisations to cooperate in the field of education, undertake joint research, exchange faculty and students, (ii) with specific agencies and industries and ISRO to undertake a research project and deliver specific design or product, and (iii) framework MOU, to participate in national and international multi-institutional research programs.

During this year new MOU signed include:

- With NARL on Sep 14, 2017 covering joint research, access to facilities, sponsoring JRF for PhD and internships.
- Exchanged MOU with Technion (Israel) during the visit of PM of Israel to India in January 2018 for faculty and student exchange and joint research and workshops.
- With Mangrove and Marine Biodiversity Conservation Foundation, Mumbai, Office of Chief Conservator of Forests, Government of Maharashtra on March 27, 2018 for undertaking a remote sensing based monitoring of mangroves in the coast of Maharashtra.
- With the Regents of University of Colorado (USA) for joint space education and research in May 2017

4.7 Patents & IPR

Institute's policy is to protect its intellectual property, and contribute to the country's industrial growth by facilitating commercial exploitation of such property through transferring technology and licensing its patents. Such activities started formally within IIST by 2014, and are being coordinated by Dean IPR & Continuing Education.

In the year 2017-18 IIST filed 2 more patent applications,

Sl. No.	Title	Application No.	Inventors
1	Reliable room temperature Gas sensor with negligible baseline drift suitable at different air flow condition	201741027050 31/7/2017	Shri. L. Karthikeyan Ms. Akshaya M. V. Dr. Palash Kumar Basu
2	Efficient hardware architectures for fast acquisition of IRNSS signal	201741041848 22/11/17	Shri. Jiljo K. Moncy Dr. Sheeba Rani J.

ACHIEVEMENTS & AWARDS

5. ACHIEVEMENTS & AWARDS

5.1 Faculty

5.1.1 Awards

Members of the faculty have won numerous awards, both in the national and international level, in recognition of their research and development work which are listed below:

- **V K Dadhwal**. Outstanding Achievement Award (2016) for contributions to Space Applications by ISRO.
- **V K Dadhwal**. Elected as Fellow of Indian Meteorological Society, New Delhi, 2017.
- **Chandrasekhar A.** (2018). Awarded the Space Sciences and Application Astronautical Society of India (ASI) award for the year 2014, Bangalore.
- **Rakesh Kumar Singh,** (2018). Young researcher award from China, Natural Science Foundation of China.
- **Chinmoy Saha** (2017). Nominated as Chairman, IEEE APS Kerala Chapter, 2017,January.
- **Babitha Justin.**(2018). Nominated for She-news Award for Women in Kerala constituted by Matrubhoomi News Channel .
- **Babitha Justin.** Featured as one of the women contributors of Literature, Arts and Culture by Brand Kerala Magazine.
- **Babitha Justin.** Featured the guest of the week in 'Have a Nice Day Programme' in ACV (Kerala).
- **AnupS.**(2017).Best Paper in Design award.3rd Indian Conference on Applied Mechanics (INCAM) 2017.MNNIT, Allahabad.
- Gokul A, Aswathy R V, **Deepu M., &** John T. (2018)Best paper award."Tharakan, Numerical Studies On Thrust Augmentation In Nuclear Thermal Rocket By Secondary Injection". Future Directions in Propulsion ASET 2018, Thiruvananthapuram.
- Vishnu A. S, **Deepu M, Sadanandan R**. (2017) Prof. VMK Sastri Best Paper Award."Experimental and numerical studies on wall heat transfer effects in cavity exposed to supersonic flow". *24thNational and 2ndInternational ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2017)* , BITS Pilani, Hyderabad.
- **Elizabeth George. Senior Project Fellow,** Avionics. Best Paper Award for the paper "Boresight Gain Enhancement of Dielectric Resonator Antenna using Metasurface Lens" iAIM 2017.
- Haritha, H & **Mary Gladis J.** (2018) Best Paper award."Ionic Shield for Polysulfides Towards High-Performance Lithium-Sulfur Battery". Indian Institute of Metals Trivandrum Chapter.Symposium on Materials Science and Engineering ,CSIR-NIIST Trivandrum, 2018.

- **SandhyaK. Y.** (2018). Research work highlighted in the front cover/back cover in the Journal of Materials Chemistry. Ref.**J. Mater. Chem. A,** DOI: 10.1039/c8ta00476e.
- Noufal M.C, Sarah Titus, Dona Maria Vincent, Rakesh ,**K.G.Sreejalekshmi**. (2017).Best Poster Award. "Azaindole fragment decoration on 4-hydrazinothiazole scaffold as a useful strategy for designing aurora kinase inhibitors: Insights from virtual screening of a synthetically feasible combinatorial library". International Conference on Drug Design, JNU-New Delhi.
- Neema P. M &**Jobin Cyriac.** (2018). *Best Paper Award.*"Facile Hydrothermal Synthesis of MoS2 Nanohybrid Material and its Application as Fluorescent Sensor for the Detection of Dopamine".*International Conference on Nanomaterials and Their Applications – Mysore.*
- **Sumitra, S.**Shiju S. S. Asif Salim. (2017). Best Student presentation award from Springer."Formulation of Two Stage Multiple Kernel Learning using Regression Framework.Accepted for oral presentation in the Seventh International Conference on Pattern Recognition and Machine Intelligence (PReMI)".
- **Sooraj V.S.** (2017) Best BTech Project guided award 2017."Design, Development and Computational Analysis of Low Pressure Abrasive Flow Finishing". Area of Aerospace Manufacturing, Instituted by Society of Aerospace Manufacturing Engineers (SAME),
- The Gnet Tracker developed at CVVR lab of Avionics department is ranked Under top 5 tracker in Visual Object Tracking Benchmark (VOT challenge 2017).

5.1.2 Visits Abroad

Faculty members have visited countries abroad as part of their research**,** partially orfullyfunded by IIST

Dr. Chinmoy Saha

- 2017 IEEE International Symposium on Antennas and Propagation and North Americam Radio Science Meeting (AP-S/USRI 2017), IEEE Antennas and Diego, California, USA. (July 9-14. 2017)
- Visiting Researcher in Royal Military College, Canada. (Nov 3, 2017- May 7, 2018)

Dr. Rakesh Kumar Singh

- Correlation Optics, conference, Chernivtsi National University, Ukraine. (Sept 10-15,2017)
- Huaqiao University, China (July 20-20, 2017, Dec 1-30,2017 & Jan 1-30, 2018)
- Optical Society of America (OSA) Chapter of Bar- Ilan University, Isreal and Tel Aviv University. (March 22-27, 2018)

Dr. Shine S R

- 7th International Symposium on Advances in Computational Heat Transfer, CHT-17, Napoli, Italy. (May 28- June 2, 2017)

Dr. Deepu M

- 7th International Symposium on Advances in Computational Heat Transfer, CHT-17, Napoli, Italy. (May 28- June 2, 2017)

Dr. Priyadarshnam

- Graduate Aerospace Laboratories, Caltec, USA. (Sept 9-16, 2017)
- INSPIRE Sat I Preliminary Design Review and INSPIRE workshop, University of Colorado, Boulder, USA. (July 25- Aug 5, 2017)
- United Nations / Russian Federation Workshop on Human Capacity Building in Space Science and Technology for Sustainable Social and Economic Development, Samara, Russian federation. (Oct 30- Nov 2, 2017)

Dr. Kuruvilla Joseph

- 2nd International Conference on Biotechnology of new materials-environment -quality of life, Siberian Federal University, Russia. (Sept 24-29,2017)

Dr. Gomathi N

- 231st ECS Meeting, New Orleans, Lousiana, USA. (May 28- June 1,2017)

Dr. Deepak Mishra

- IEEE winter conference on application of Computer Visionn 2018, Lake Tahoe, Nevada, USA. (March 12-14,2018)

Dr. Seena V

- 12th IEEE Nano technology Materials and devices Conferences (NMDC -2017), Singapore. (Oct 2-4, 2017)

Dr. Rajeevan P P

- 43rd Annual Conference of the IEEE Industrail Electronics Society (IES),Beijing, China . (Oct 29- Nov1,2017)

Dr. Govindan Kutty M

- 2nd International Space Exploration Forum for Young Professionals (Y-ISEF), Tokyo, Japan.(Feb 28- March 3,.2018)

Dr. Rama Rao Nidamanuri

- University of Kassel in Germany,Indo-German collaborative research project for consideration by DBT, Govt. of India. (June1- Aug 31,.2017)
- Faculty of Agriculture, University of Kassel, Germany. (Nov 25- Dec5,2017)

Dr. Anandmayee Tej

- United Nations/Italy Workshop on the Open Universe Initiative to be held at United Nations Office for Outer Space Affairs at Vienna, Austria. (Nov 20-22,2017)

Dr. Ambili K M

- New Orleans, Louisiana, USA. (May 28- June1,2017)

Dr. Resmi L

- Conference Physics of Extreme Gravity Stars , Sweden. (June 12-22,.2017)
- University of Leicester and international conference for Women in Physics (ICWIP) IUPAP, Leicester. (July 10-20,2017

5.2 Students

5.2.1 Awards

Research scholars and students achieved excellence by winning various awards as listed below. These being in addition to awards where both students and faculty jointly achieved recognition and are listed in Section 5.1.1.

- **Pallavi,** MTech student,Avionics.**(2017).**INAE Best MTech project award.
- **Sarakar P.R.** BTech Student, Avionics.(2017).Short listed for INAE Best BTech project award 2017.
- **Karthikayan** L.MTech, Avionics. INAE (2017) Best MTech thesis award. "Optically- Activated ZnO Nanomaterial for Hydrogen Gas Sensor and its Correlation with Photoluminescence Spectra".
- **Thesniya P.M.(2017)**. Second best poster prize. "Spectral and photogeologic mapping of Grimaldi region of the Moon" . Vision &Explorations for Planetary Sciences in Decades 2020-2060, PRL Ahmedabad.

5.2.2 Internship/Conference Abroad

The research scholars and students of IIST had excellent opportunities to visit countries abroad for attending seminars/conferences or for doing research internships.

Shri. Najeeb Punnakayathil ,(PhD)

- 30th International Conference on Photonics Electronics and Atomic Collisions and its associated satellite meeting to be held at Cairns, Australia. (July 26-Aug 4, 2017)
- RIKEN Atomic Molecular and Optical Physics Laboratory, Japan. (Jan30 – March 1, 2018)

Mr. Mathew Saxon, (M Tech)

- 7th International Symposium on Advances in Computational Heat Transfer, CHT-17, Napoli, Italy. (May 28- June 2, 2018)

Mr. Mithun Krishna P M, (M Tech)

- Numerical Investigation of wavy microchannels with rectangular cross section, 7th International Symposium on Advances in Computational Heat Transfer, CHT-17, Napoli, Italy. (May 28- June 2, 2018)

Mr. Nandakrishnan S L (M Tech)

- 7th International Symposium on Advances in Computational Heat Transfer, CHT-17, Napoli, Italy. (May 28- June 2, 2018)

Shri. Mohit Singh Malik (B Tech)

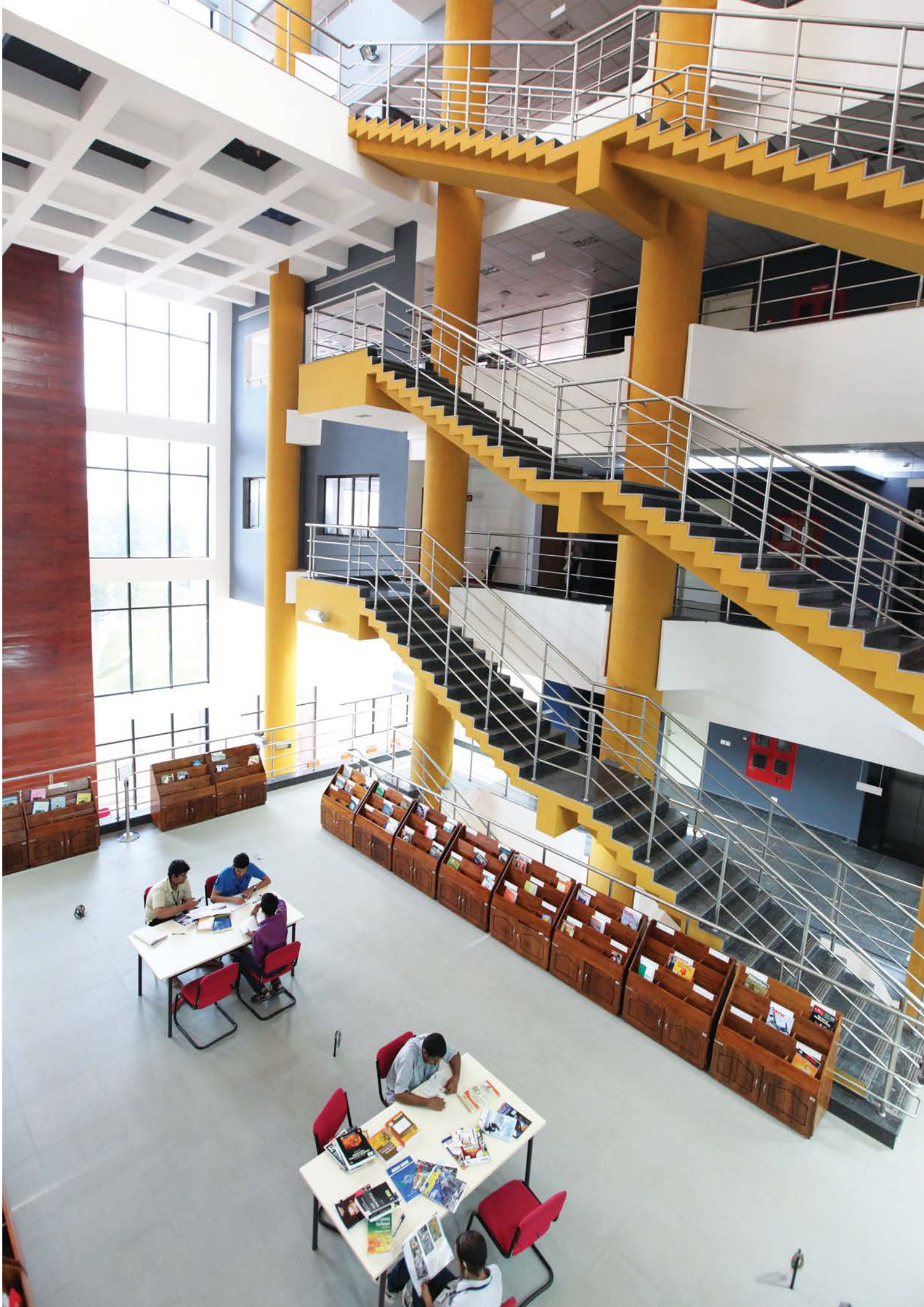
- Graduate Program at CALTECH, Pasadena, California, USA under Dr. Satish Dhawan endowed Fellowship (September 11. 2017 – 6 July, 2018)

Summer Training Program at INSPIRE, Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder. (June 5- Aug 3, 2018)

- Shri Ankit Verma (B Tech)
- Ms. O N Niwhashini (B Tech)
- Shri. Kaustubh Anand Kandi, (B Tech)

Internship at JPL, California, USA for 8 weeks. (June-July 2017)

- Shri. Padmanabha Prasanna Simha, (B Tech)
- Shri. Prashant G Iyer, (B Tech)
- Shri. Hriday Dath, (B Tech)



PUBLICATIONS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COMPUTATIONAL FLUID

6. PUBLICATIONS

With a view to increase the credibility of research and share the knowledge with the academic community and society at large, faculty members and scholars of IIST had publications in journals (195), had 114 conference papers and 13 book chapters. 5 members of the faculty have published books in areas of engineering, literature and mathematics.

6.1 Books (5)

- **B. S. Manoj**, A. Chakraborty, and R. Singh. (2018). *Complex Networks*, Pearson, New Jersey, USA.
- **Anindya Dasgupta.,** P. Sensarma., (2017).*Design and control of Matrix Converters*, Springer Singapore.
- **Babitha Justin**.(2017). *From Canons to Trauma: Essays on Literature.* Bodhi Tree, 2017. ISBN 9788193258781.
- **Chinmoy Saha**, A. Halder and D. Ganguly.*Basic Electronics: Principles and Applications*, Cambridge University Press, Shaftesbury Road,Cambridge, UK (ISBN: 9781316632932).
- **Raju K George,** Nandakumaran A. K., Datti P.S., (2017). *Ordinary Differential Equations,* Cambridge -IISc Series.

6.2 Journal Publications (195)

In the reporting year IIST had 195 journal publications, 114 conference papers and 13 book chapters. 5 members of the faculty has published books in areas of engineering, science and literature

Director

- Bothale RV, Anoop S, Rao VV, **Dadhwal, VK**; Krishnamurthy, YVN (2017) Understanding relationship between melt/freeze conditions derived from spaceborne scatterometer and field observations at Larsemann hills, East Antarctica during austral summer 2015-16. Current Science, 113(4): 733-742
- Mahesh P, Biswadip G, Rao PV, **Dadhwal VK**, Sreenivas G, Kanchana AL, Mallikarjun K. (2017) A new ground-based FTIR spectrometer reference site at Shadnagar (India) and preliminary columnar retrievals of CH4 and N2O. International Journal of Remote Sensing.;38(14):4033-4046.
- Nair T, James L, Rao CV, Prasad AVV, Krishna BG and **Dadhwal VK** (2017) A Study on the Delineation of Coral Reefs in Andaman and Lakshadweep Islands Using RISAT-1 Data. Journal of the Indian Society of Remote Sensing, 45(5): 873-885

- Nandy S, Singh R, Ghosh S, Watham T, Kushwaha SPS, **Dadhwal VK** (2017) Neural network based modelling for forest biomass assessment. Carbon Management, 8(4): 305-317
- Reddy CS, Jha CS, Manaswini G, Alekhya V, Pasha SV, Satish KV, Diwakar, PG, **Dadhwal VK** (2017) Nationwide assessment of forest burnt area in India using Resourcesat-2 AWiFS data. Current Science , 112(7):1521-1532
- Reddy CS, Manaswini G, Jha CS, Diwakar PG and **Dadhwal VK** (2017) Development of national database on long-term deforestation in Sri Lanka. Journal of the Indian Society of Remote Sensing, 45(5): 825-836.
- Reddy CS, Saranya KRL, Jha CS, **Dadhwal VK**, Murthy YVNK (2017) Earth observation data for habitat monitoring in protected areas of India. Remote Sensing Applications: Society and Environment, 8: 114-125
- Reddy CS, Singh J, Jha CS, Diwakar PG and **Dadhwal VK** (2017) Development of spatial database on intact forest landscapes of India. Global and Planetary Change, 148: 131-138
- Reddy CS, Singh S, **Dadhwal VK**, Jha CS, Rao N Rama, Diwakar PG (2017) Predictive modeling for the spatial pattern of past and future forest cover change in India. Journal Earth System Science, 126(1):8p
- Watham T, Kushwaha SPS, Patel NR, **Dadhwal VK**, Kumar AS (2017) Ecosystem productivity and its response to environmental variable of moist Indian sal forest. Tropical Ecology 58(4):761-768
- Watham T, Patel NR, Kushwaha SPS, **Dadhwal VK**, Kumar AS (2017) Evaluation of remote-sensing-based models of gross primary productivity over Indian sal forest using flux tower and MODIS satellite data. International J Remote Sensing 38(18);5069-5090.
- Watham T, Patel NR, Kushwaha SPS, **Dadhwal VK** (2017) A study on sap flow rate of Mallotusphilippensis and its relationship with environmental factors. J Agrometeorology, 19(1): 104-109.

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- **Mahesh, S.**, Gopakumar, R., Rahul B.V., Dutta, A.K., Mondal,S., & Chaudhuri, S. (2017). Instability control by actuating the swirler in a lean premixed combustor. In the *Proceedings of the 1st National Aerospace Propulsion Conference (NAPC - 2017)*, IIT Kanpur.
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Department of Avionics

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- Keelaillam, S., & **Saha, C.** (2017, December).Capacitively loaded loop (CLL) structure for pattern reconfigurability applications in printed dipole antenna. In *Applied Electromagnetics Conference (AEMC), 2017 IEEE* (pp. 1-2).IEEE.
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- Jain, A., **Gorthi, S. R. S.**, & **Mishra, D**. (2017, December). Stacked Features Based CNN for Rotation Invariant Digit Classification. In *International Conference on Pattern Recognition and Machine Intelligence* (pp. 527-533).Springer, Cham.
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- Gautham, S., Abhishek, C., &**Manoj, B. S.**(2018, February). Deterministic Evolution Through Indexed Leaf Node Based Attachment in Complex Networks. In *Proceedings of NCC 2018*.
- Mithun, P. V., Babu, S., &**Manoj, B. S.** (2017, December). On resolving network view inconsistencies in SDN control plane. In *2017 IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)* (pp. 1-6).IEEE.
- **Basu, P. K.**, Karthikeyan, L., Akshaya, M. V. (2018). Development of Field Activated Nano crystalline Metal Oxide based Reliable Gas Sensor: An Alternative of Si based MEMS Microheater. In *International conference on Nanomaterials : Synthesis, Characterization and Applications*, ICN.
- Reshmi, S., Karthikeyan, L., Akshaya, M .V.,**Basu, P. K.**& Bhattacharjee, K. (2017). Tailored MoS2 nanorods: A liquid phase exfoliation technique followed by microwave heat treatment. In *International Conference on Materials for Advanced Technologies (ICMAT 2017)*, Singapore.
- Karthikeyan, L., Akshaya, M. V., & **Basu, P. K.** (2017). Reliable, Room Temperature and Flow Independent UV Propelled Hydrogen Sensor.

In *International Conference on Advancement in Engineering, Applied Science and Management (ICAEASM-2017) in C-DAC, Mumbai (Centre for Development of Advanced Computing)*.

- Karthikeyan, L., Akshaya, M. V., & **Basu, P. K.** (2017, August).Accelerated hydrogen gas sensing of ZnO nanosphere at room temperature by photoactivation. In *2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)* (pp. 2903-2906).IEEE.
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- Shruti, N.,& **Rajeevan, P. P.**(2017, December).A Multilevel Voltage Waveform Generation Scheme with Reactive Power Compensation for PV Systems. In *IEEE International WIE Conference on Electrical and Computer Engineering (WIECON-ECE 2017),*IEEE.
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- Anjana, C., Saranya, B.T, & **Seena, V.** (2017, December).Integration of High Gauge Factor ITO with Polymer Sensor Platforms for Biochemical and Inertial Sensing.*XIXth International Workshop on The Physics of Semiconductor Devices (IWPSD 2017)*, IIT Delhi.
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- Deepthy, C. K, & **Seena, V.** (2017, December). Modeling and Simulation of Transverse Capacitive Comb MEMS Accelerometer with Force Feedback.*XIXth International Workshop on The Physics of Semiconductor Devices (IWPSD 2017)*, IIT Delhi.

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- Mounika, K., & **Sheebarani, J.**& **Gorthi, S. R. S.**(2018, February).Stochastic Assimilation Technique for Cloud Motion Analysis.In *Proceedings of 2nd International Conference on Computer Vision & Image Processing* (pp. 103-113).Springer, Singapore.
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- Amitkumar, K. S., **Kaarthik, R. S.,**& Pillay, P. (2018). A Versatile Power-Hardware-in-the-loop Based Emulator for Rapid Testing of Transportation Electric Drives. *IEEE Transactions on Transportation Electrification*.
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- Harshavardhana, T. G**., Vineeth, B. S.,** Anand, S. V. R., & Hegde, M. (2018, January). Power control and cross-layer design of RPL objective function for low power and lossy networks. In *Communication Systems & Networks (COMSNETS), 2018 10th International Conference on* (pp. 214-219). IEEE.

Department of Chemistry

- Aswathi, R., **Sandhya, K. Y.**(2017, April). Physiological level and selective electrochemical sensing of dopamine by a solution processable graphene and its enhanced sensing property in general. *Material Research Society of India (MRSI) Trivandrum Chapter Annual Meet*.

- Nair, A. J. S., Aswathi, R.,& **Sandhya. K. Y**. (2017, December). Micelle Assisted Hydrothermal Route for the Synthesis of MoS2 Hollow Nano Flowers (HNF). *Bangalore ,India Nano, Bangalore*.
- Neema, P. M.,& **Jobin Cyriac.** (2018, March). Facile Hydrothermal Synthesis of MoS2 Nanohybrid Material and its Application as Fluorescent Sensor for the Detection of Dopamine, *International Conference on Nanomaterials and Their Applications , Mysore*
- Neema, P. M., & **Jobin Cyriac.**(2018, April). Synthesis, Characterization and Chemical Sensor Applications of Molybdenum based Nanoparticles, *Indian Institute of Metals- IIM- Symposium on Material Science and Engineering* , Thiruvananthapuram.
- Neema, P M., Manjunatha Ganiga., & **Jobin Cyriac.**(2017, December).Fluorescent MoS2 nanohybrid material as a sensor for Selective and Sensitive Detection of Dopamine, *Bangalore India Nano*, Bangalore.
- Neema, P. M., Manjunatha Ganiga.,& **Jobin Cyriac.** (2017, September).Selective and Sensitive Detection of Dopamine Using MoS2 Hybrid Nanoparticles, *East Asia Symposium 8*, Thiruvananthapuram.
- Neema, P. M., **Jobin Cyriac.** (2017, July). Luminescent MoS2 Quantum Dots Dispersed Over Nanosheets- Elucidation of Its photoluminescence Origin, *Chemical Research Society of India (CRSI)- ACS Symposium*, IICT- Hyderabad.
- Suchithra, C., ManjunathaGaniga.,**Jobin Cyriac.**(2017, January).Fluorescent Polymer Films of Carbon Dots-PMMA Nanocomposites, *International Conference on Polymer Science*, *MACRO-2017*, Thiruvananthapuram.
- Reshma, C., & **Mary Gladis, J.**(2017, December). Facile Synthesis of Hierarchically Porous Carbon Tubes Inherently Doped with Nitrogen, Oxygen and Iron oxide Nanoparticles as Supercapacitor Electrodes, *in International Conference on Advanced Materials and Processes (ADMAT 2017), organized by Indian Space Research Organization*, Thiruvananthapuram .
- Haritha, H., & **Mary Gladis** ,J.(2017, December). High-energy asymmetric supercapacitors based on Li+ intercalation into a nanocrystalline inverse spinel LiCoVO4, *Bangalore India Nano*, Bangalore.
- Haritha, H.,& **Mary Gladis. J**.(2017, August). December Inverse spinel nanocrystalline LiCoVO4 with ultrahigh energy density as Li+ intercalation pseudocapacitor material.*International Conference on Advanced Materials and Processes (ADMAT SkyMat 2017)*.
- Singh, P.P., Gupta. R.K., Anilkumar. V., **Mary Gladis. J.**, & Satish Kumar, Singh. (2017, December). Microstructure Evolution and Change in Hardness Through Differential Thermomechanical Working in Ti6Al4V Alloy. *International Conference on Advance Materials and Process*.
- Reshma, C.,& **Mary Gladis, J.**(2018, March).Quadruple Confinement Effect on Sulphur in Insitu Functionalized Hierarchically Porous Carbon with Silicon, Nitrogen and Oxygen from honeycomb nest for a High-Performance Lithium

Sulphur Battery, N*ational level meet of young scientists working in the field of Hydrogen Energy and related Advanced Materials (HEAM Scientist 2018*.

- Reshma, C., & **Mary Gladis, J**.(2018, January). Insitu Functionalised Hierarchically Porous Carbon with Iron, Nitrogen and Oxygen for a High-Performance Lithium Sulphur Battery, *in Indo-US bilateral workshop on nanotechnology for clean energy generation and storage (INDO US Workshop 2018)*.
- Haritha, H.,& **Mary Gladis, J**.(2018, March). High Energy Intercalation Pseudocapacitive Electrode Materials for Supercapattery, *Materials Research Society of India Trivandrum Chapter - Annual Technical Meeting*.
- Haritha, H., & **Mary Gladis,J**.(6April 2018). Ionic Shield for Polysulfides Towards High-Performance Lithium-Sulfur Battery, Indian Institute of Metals Trivandrum Chapter, *Research Scholars Symposium on Materials Science and Engineering held at CSIR-NIIST,* Trivandrum.
- Rakesh, R., Singh, Manjinder., Mrudul, C., Lakshmi, S., Parvathy, V.S., & **K.G Sreejalekshmi.** (2017, September).Organic Small Molecule Mechanofluorochromic Dyes:Synthesis, Optical Responses in Varying MacromolecularEnvirons and Prospective Application in Flexible Sensor. *8th East Asia Symposium on Functional Dyes and Advanced Materials (EAS82017)*.
- Rakesh, R., & **Sreejalekshmi, K. G.**(2017, September). Design and Development of Colour Tunable MultiheterocyclicSmall Organic Fluorophores as Multifunctional MolecularMaterials, *8th East Asia Symposium on Functional Dyes and Advanced Materials (EAS82017)*.
- Noufal, M.C., Sarah Titus., Dona Maria, Vincent., Rakesh, R., & **Sreejalekshmi, K. G.** (2017, April). Azaindole fragment decoration on 4-hydrazinothiazole scaffold as a useful strategy for designing aurora kinase inhibitors: Insights from virtual screening of a synthetically feasible combinatorial library, *International Conference on Drug Design*, JNU-New Delhi.
- C, Mrudul., Sam Noble., **Sreejalekshmi, K. G.** (2017, July). Design of Flapping Wing Mechanism for Bionic Micro Aerial Vehicle, *Fourth International Conference on Materials Mechanics and Management* .

Department of Earth and Space Science

- Gopalakrishnan, D., & **Chandrasekar, A**. (2018).Improved 4-DVar Simulation of Indian Ocean Tropical Cyclones Using a Regional Model. *International Tropical Meteorology Symposium (INTROMET 2017) on Advancements, Space-based Earth Observations and Services for Weather and Climate,* Space Application Center, Ahmedabad.
- **Nidamanuri, R.R**., **Ramiya, A.M**., & Dadhwal, V.K., (2017 January). 3D laser scanning for estimation of large scale buildings rooftops based solar energy in urban environments, 2018 *International Conference on Sustainable Energy and Environmental Challenges*, IISc, Bangalore.

- Kakkassery, A. I., & **Rajesh, V. J.** (2018, March).Detection of Zoisite from Eos Chaos---Implication for Hydrothermal Alteration on Mars.In *Lunar and Planetary Science Conference* (Vol. 49).
- Paramanick, S., **Rajesh, V. J.**, Praveen, M. N., & Sajinkumar, K. S. (2018, March). Spectral Characterization of Copiapite and Rozenite from Sulphide-Rich Banded Iron Formations in Wayanad, Kerala, India and Its Implications.In *Lunar and Planetary Science Conference* (Vol. 49).
- Kakkassery, A. I., & **Rajesh, V. J.** (2018, February). Mineralogical and structural characteristics of Eos Chaos on Valles Marineris, Mars: Implications for aqueous and hydrothermal processes. *Proceedings of 5thUGC-SAP DRSII (2013-2018) seminar and talks of the Current Trends in the Earth System Sciences (CTESS2017).*
- P.M. Thesniya., & **Rajesh, V. J.** (2018, February). Detection of primary mineral assemblages in the Grimaldi basin on the nearside of the moon: Implications for the evolution of the lunar crust. *Proceedings of 5thUGC-SAP DRSII (2013-2018) seminar and talks of the Current Trends in the Earth System Sciences (CTESS2017).*
- Saranya, R., Chandran, P.M., Thesniya., **Rajesh, V. J.**, & Ajit Govind. (2018, February). Compositional diversity of lunar magmatic spinels: implications for endogenic processe., *Proceedings of 5th UGC-SAP DRSII (2013-2018) seminar and talks of the Current Trends in the Earth System Sciences (CTESS2017).*
- Nair, A. P., **Rajesh, V. J.**,&**L. Gnanappazham**. (2018, February). Morphological and mineralogical features of JuventaeChasma, Mars; implications for hydration processes*, Proceedings of 5thUGC-SAP DRSII (2013-2018) seminar and talks of Current Trends in the Earth System Sciences (CTESS2017).*
- Kakkassery, A. I., & **Rajesh, V. J.**(2018 January). Spectral and morphological mapping of Western Eos Chaos, Valles Marineris: Implications for aqueous processes on Mars. *30thKerala Science Congress.*
- Nair, A.P., **Rajesh V. J.** & L. Gnanappazham. (2018, January).Spectral and chemical characterisation of red sands, Muttom, *30th Kerala Science Congress*, pp.120. Abstract 04-09.
- Thesniya,P.M., & **Rajesh, V. J.**(2018 January). Compositional mapping of a localized pyroclastic deposit in the Grimaldi basin on the western limb of the moon.*30th Kerala Science Congress, pp.120. Abstract 04-10.*
- Uthup, Sam., T. Tsunoga., **Rajesh, V. J.**.(2017, December). Significance of mafic-ultramafic rocks in Bhavani Shear Zone, South India: Implications for Archean crust-mantle interaction processes. *Eight Symposium on Polar Science, National Institute of Polar Research, Japan.*

Department of Humanities

- **Alex, Gigy, J.** (2018, March). Science Fiction: A Journey from Gothic to Post human, through Colonial and Post colonial Trajectories .*UGC National Seminar on Myth Fantasy and Quest for Identity in Science Fictions and Movies, Sree Snkaracharya University*.
- **Nair, L. V.** (2018, February). Women IT Micro Enterprises of Kerala. *National Conference on Gender and Media. University of Delhi.*
- **Shaijumon, C. S. (**2017, November). Make in India: Brand India Globally. *National Management Convention and South India Conclave. Kerala*
- **Shaijumon, C. S.**(2017, November).Unlocking India – US Trade Potential, *Embassy of United States of America, Bangalore.*

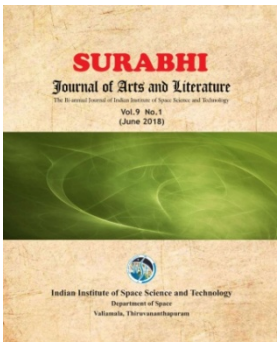
Department of Mathematics

- **Moosath, S. K. S.** (2017, November). Exponential and q-Exponential Family of Distributions - A Geometric Approach, *Himachal Pradesh Science Congress.*
- Shiju, S. S., Salim, A.,& **Sumitra, S** (2017, December).Effectiveness of Representation and Length Variation of Shortest Paths in Graph Classification. Accepted for oral presentation in the *Seventh International Conference on Pattern Recognition and Machine Intelligence (PReM).*
- Shiju, S. S., Salim, A.,& **Sumitra, S** (2017, December).Formulation of Two Stage Multiple Kernel Learning using Regression Framework. Accepted for oral presentation in *the Seventh International Conference on Pattern Recognition and Machine Intelligence (PReMI).*

Department of Physics

- Thomas, Anna.,& **Jinesh, K.B.** (2018, February)Photoluminescence and bandgap statistics of MoS_2 nano-sheets, *International Conference on Thin films and Applications, Kerala.*
- Reshmi, S., Akshaya, M. V., Basu, P. K., & **Bhattacharjee, K.** (2018, April). Electron beam interaction and its effect on crystalline 2H phase of MoS2. In *AIP Conference Proceedings* (Vol. 1942, No. 1, p. 050097). AIP Publishing.
- Sadhukhan, P., Singh, V. K., Rai, A., **Bhattacharjee, K.**, & Barman, S. R. (2018, April). Surface alloying in Sn/Au (111) at elevated temperature. In *AIP Conference Proceedings* (Vol. 1942, No. 1, p. 080073).AIP Publishing.

6.5 Institute Publications



Surabhi: Journal of Arts and Literature is a bi-annual art and creative journal published by Indian Institute of Space Science and Technology. It publishes creative and literary articles written by students, staff and faculty of IIST as well as employees from various centres of Department of Space. It also publishes interviews of interesting and talented personalities from DOS.

6.6 In-house Publications

The Sounding Rocket (TSR) is the biannual student newsletter composed and designed by students at IIST chronicling life and times at the institute.

INFRASTRUCTURE, FACILITIES & OTHER UNITS

7. INFRASTRUCTURE, FACILTIES & OTHER UNITS

7.1 Infrastructure

The major infrastructure works completed during this period are: (i) Avionics Block (D3) (ii) Interdisciplinary Block (D1), (iii) Over Head Water Tank-1 (iv) Commissioning of dedicated 11 kV UG feeder

1. Avionics Block (D3)

The Avionics Block consists of 8 classrooms, 27 labs and 36 faculty rooms with a total built-up area of 7664.15 SQM and was built at a cost of Rs15.88 Cr. The building was inaugurated by Chairman, ISRO on 14.09.2017

2. Interdisciplinary Block (D1)

The Interdisciplinary Block consists of 13 classrooms, 21 labs and 46 faculty rooms with a total built up area of 8209.99 SQM and cost Rs 19.21 Cr. The building was inaugurated by Chairman, ISRO on 14.09.2017

3. Over Head Water Tank-1

This Over Head Water Tank (1 Lakh litre) is constructed exclusively to meet the water demands of Academic Blocks.

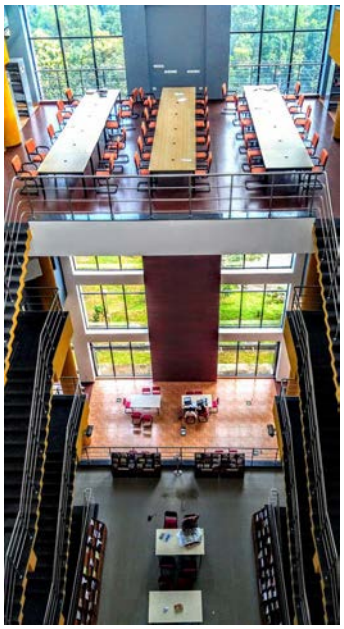
4. Dedicated UG 11 kV feeder for IIST from Nedumangad Substation

To meet the uninterrupted power supply requirement of IIST, a dedicated 11kV feeder from Nedumangad substation available with LPSC extended to IIST and commissioned on 26.05.2017. It comprises a length of Cable of 1811 m and cost Rs 42.51 Lakh.

7.2 Facilities

7.2.1 Library & Information Services

Library continued its support for academic & research activities of the Institute by acquiring various types of information sources, by subscribing to electronic resources and providing various information services.



Collection Development

Resources	Addition during 17-18	Total as on 31st March 2018
Books	1983	20660
Book Bank Books	634	10345
Print Journals	Nil	86
Online Journals	614	5614
Citation Database	1	1
Bound Volumes	174	384
Electronic Books	Nil	335
CDs	32	1023
Maps	18	117
Reports	161	792

During the reporting period, library has spent Rs.51.9 lakh for purchase of books. Total expenditure incurred for subscription of print journals was Rs.53 lakh and for online resources Rs.225.9 lakh. Online resources were subscribed in three modes :
(i) Direct / through agency (ii) through Antariksh Gyaan (ISRO-DOS Consortium) and (iii) e-ShodhSindhu consortium to have maximum economical benefit.

Documentation Facility: A new facility introduced in the library for managing various documents brought out by the Institute. Journal articles published from IIST for last 10 years were compiled and brought out as a publication.

Shodhganga Co-ordination: IIST joined in the Shodhganga – digital repository of PhD theses maintained by INFLIBNET/UGC - and soft copies of theses from IIST uploaded to the repository.

Book Bank Service: New 631 books, amounts to Rs. 4.42 lakh, added to the text book bank for B Tech students. During the period, 6572 books were distributed through this service.

Book Grant Facility: B Tech students are entitles to have book grant to purchase books suitable for their academic purposes. Students purchased 2357 books, costing Rs.11.43 lakh, during 2017-18.

Plagiarism Checking Facility: Library started this new service and acted as the central point for checking plagiarism in articles, reports and theses. In addition, campus wide access to the plagiarism checking software was enabled for faculty.

Remote Access Facility: The facility to access electronic resources remotely was maintained for the IIST faculty.

Information Alert Service:Library provided the following information alert services:

(i) JournalTOCs: 441 users are using this facility to follow their favourite journals (ii) Print Journal Content Service: This is a fairly new service provided by the library to update users about the contents of print journals received by the library. Content pages of 520 journal issues were scanned and uploaded to the library portal. (iii) List of new books uploaded to the library portal every fortnightly and intimated users by e-mail. (iv) Latest publications / posters presented in conferences by faculty / students of IIST displayed in the library.

Graphic Design Facility: During the reporting period, this central facility was used for designing various documents such as Institute brochure, calendar, magazine, proceedings, annual reports etc. Around 100 documents were designed from this facility for various purposes.

Reprographic Facility: This facility met photocopying and printing requirements of the Insttitue for the academic and administrative purposes. During 2017-18, total 7.39 lakh copies were printed and Rs. 5.46 lakh was generated for providing the service.

Binding Facility: More than 1000 documents bound in this facility during last year. The facility was extended for students for their personal purpose and Rs. 36916/- was collected for binding personal documents.

Resource Awareness Programme (REAP): Library has conducted 5 REAPs on various topics such as Turnitin, Web of Science and on various electronic resources. This resulted in increase in the usage of electronic resources.

Other Services

IIST Library registered 780 people in the National Digital Library of India. Library provided patent search service and Inter Library Loan service on demand.

Internship Programme: Library started internship training programme for PG students in L&IS.

7.2.2 Communication, Computing & Audio-visual Facilities

1. Computer Services Group (CSG)

CSG provides the following IT and non-IT services in IIST to the faculty members, students and staff directly in all the buildings and locations in the campus.

- **Computer and Software Support Services**
  CSG facilitates support services to ~2200 computers and its users. . ~900 'Bring-Your-Own-Devices' (Laptops, Tablets and Smart Phones) mostly owned by students, research scholars and members of the staff and faculty are also supported.
- **Computer Peripherals and Consumables Services**
  Installed base of 275 printer peripherals
- **HPC Cluster Computing Support Services**
  3-TFLOPS Intel HPC, made of 32-nodes/256-cores continues to be has been maintained.
- **Web & Database Services for Information Systems**
  Information systems of IIST are hosted in the web application servers, databases servers and storage servers located in 33 Computer Servers and 2 Storage Servers in the Server Room.
- **Local Area Network, Wireless Network & Internet Services**
  LAN infrastructure in use consists of 135nos of Manageable 24/48 port switches aggregating on to a dual redundant pair of modular-high-end network-core-switches in the server-room.
  Wireless Network Services: Roaming mobile wireless network services are available through 14 SSIDs. The infrastructure consists of Wireless Access Points (260 nos.), Wireless Controllers (5nos), Manageable (24), port PoE switches – 42 nos. and Wireless Network Management Server.
- **Information System Security and Network Security Services**
  DoS/ISRO's directives on improving cyber-security of information systems and networks are being implemented in IIST as part of the IT & ITeS Implementation Programme (IIIP) of DoS/ISRO.

- **Identity and Access-Control Services**
  Fingerprints of all students, employees and staff have been enrolled into the Biometric Access Control Systems as per DoS/ISRO guidelines, in order to facilitate self-authenticated round-the clock entry/exit at the Main Gate.
- **Audio-Visual Multimedia Services**
  Satellite Communication services consisting of DTH-Satellite receivers have been setup in conference halls and classrooms to facilitate display of ISRO Live Telecasts and SWAYAMPRABHA classes.
- **Video and Audio Conferencing Services**
  SPACENET VPN has been facilitated to access information services made available by Dos/ISRO centres/units.
- **Video Surveillance and Safety Services**
  Video surveillance services have been re-established in 11 student-hostels in 2017-18.
- **Telephone & Satellite Communication Services**
  Telephone communication services are operated from BSNLs Telephone Exchange installed in IIST. Currently, 296 nos. of wired-telephone connections and 13 fax connections are operational.
- **Inventory & Stores Management** Summary count of current inventory managed by CSG comprises of computers (1325 nos.), Network devices (518 nos.), Audio Video Multimedia Devices (639nos.), Phones (350 nos.), Printers (278 nos.) s on 15-Aug-2018 includes faulty devices.

2. Software Support Group

Software Support Group (SSG), lead by a team of IT professionals provides various software services and technical assistance in Indian Institute of Space Science and Technology.

SSG implements software services to the various departments such as Academics, Administration, Transport, Canteen, Purchase, Stores, Accounts and Placement in the Institute. SSG has designed, implemented, customized, tailored and updated many web applications within limited time constraint with accuracy. SSG plays an important role in providing software solutions based on Institute demand.

This year, admission to undergraduate programme was carried out successfully using the online counselling software developed by this team. The key project assignments include; a portal for alumni forum, online examination, complaint logging etc in addition to a few enhancements activities.

7.2.3 Medical Facilities

While the faculty and permanent staff are covered under DOS CHSS scheme and temporary staffs are supported by reimbursement of medical insurance, the students are separately provided medical facilities due for a residential campus. During this year, based on a contract, the medical services, comprising of an OPD at Dhanishta Hostel and in-patient and investigations at RIMS Hospital, Nedumanagad were provided. A fully equipped ambulance and one light vehicle are always kept ready to meet emergency situations.

Counseling and Support Centre

IIST has a Student Counselling cell in place that offers supportive and conducive environment for any student with personal issues or challenges which require the help and guidance of a professional counsellor. Our counsellor Ms.Akhila (M.Phil, Clinical Psychology, and Delhi University) is available to offer support to the students to deal with a wide range of concerns -be it academic, personal, emotional, family or peer related through counselling. Students can meet counsellor as and when needed. Parents and teachers can also approach the counsellor for students' concerns.

7.2.4 Hostels

The institute has 11 Hostels (08- Men's & 03- Women's) named after the mythological-constellations 'Nakshatras' viz. Dhruva, Dhanista, Chitra, Revathi, Rohini, Ashwini, Ardra, Phalguni, Anuradha, Arundathi & Vishaka. Around 800 students stay in the hostels. All the hostels are provided with safe drinking water both hot and cold water dispensers and 24 hr uninterrupted power supply with generator backup. Neat and tidy upkeep of the hostel rooms are the responsibilities of the students. Separate reading rooms are identified in all hostels. National and vernacular newspapers are subscribed for students. Indoor games facility, LCD television with satellite connection etc. and centralized gym facility with modern fitness equipments are also available. All hostels are Wi-Fi enabled with high speed access to

the internet, digital library and other digital learning resources. Laundry services are taken care by the service provider identified for the purpose.

7.2.5 Canteen Services

Canteen Services of IIST caters to the need of more than 800 inmates of the Institute hostels as well as to the regular population of more than 300 people which includes faculty members, officers and staff. Student Dining Halls viz. 'Aditi' and 'Akshaya' has a capacity of 150 each which caters to the auxiliary staff also. 'Tripthi' and 'Subhiksha' is for faculty members and VIP services respectively. Menu is finalized by the Canteen and Hostel Committee which includes student representatives. In addition to this, Canteen Management Committee, Canteen Procurement Committee and Canteen Accounting Committee are constituted to assist the smooth functioning of the Canteen Services.

Cafeteria

Private run cafeterias are present in the Aerospace building, Physical Science building and near the gate complex. A juice outlet is also available. All necessary requirements of stationery and other toiletries are met by the stationery counter operational along with the cafeteria.

7.2.6 Bank / Financial Services

The Institute houses the Union Bank of India along with its ATM, near the student residential area for easy access for students.

7.2.7 Transport

Transport Operation & Maintenance Division of IIST is responsible for providing all transportation requirements of the Institute including CISF through institute owned

vehicles as well as hired vehicles. 26 contract drivers and 9 support staff (on contract) are deployed, who operate light vehicles and 3 regular bus routes on all working days and transporting goods particularly for canteen and purchase department.

IIST has a full fledged workshop consists of Mechanical maintenance section, Patch work and painting, servicing and washing section, and a sundry stores. The entire maintenance activity of all Department vehicles is carried out in house including overhauling of engine, gear box, differential, brake system, suspension, patch work, painting, and renewal of upholstery.

A fuel pumping station (Storage capacity: 20KL Diesel plus 10KL Petrol) has also been installed in IIST for fueling the department vehicles.

7.2.8 Sports and Recreation

A Sports Ground (100m x 50 m) in the area earmarked for the future residential area is available to the students for all kinds of sports activity. This is now being upgraded to (100m x 100m). All the hostel and academic blocks are provided with Table Tennis tables. An open Basket ball court and Volley ball Court are also available in the campus. There are two badminton courts in the Physical Sciences building.

Gymnasium facilities have been provided in Hostel Dhanishta and Hostel Arundhathi, with facilities like Cardio Vascular Endurance training machines, Resistance training equipments and free weights. In addition, an Outdoor gymnasium for functional strength training and core training is also set up.

Sports activities are conducted under overall guidance of Sports Council. During 2017-18, IIST participated in ISRO/DOS InterCenter Sports Meet as well as additional in-house tournament of Faculty-Staff were organized.

Cricket match was organized for staff and faculty of IIST on March 10th 2018. Six teams from different departments participated in this tournament and Transfighters (TOMD) won the championship

A team of faculty and staff participated in the intercentre sports meet hosted by SAC, Ahmedabad. Ms Sreeja JJ, from software support group of IIST bagged the bronze medal in the 200m running, women open category.

7.2.9 Security Services

Campus Security services is entrusted to CISF personnel. A CISF contingent including Assistant Commandant and 107 officials keep vigil for 24 x 7 in the residential campus. Ordinary security personnels are also employed in all buildings of the campus.

7.2.10 Scholarships & Financial Support

DOS BTech Assistance Programme

Department of Space Assistanceship covers full cost of education (ie, course fee, Hostel fee, Books & Hostel charges and medical expenses) for all undergraduate students who score a CGPA of 7.5 and above.

1	Statutory Semester Fee	Rs.20,000/-
2	Students Amenity Fee	Rs.4000/-
3	Hostel charges including dining	Rs.14,400/-
4	Establishment charges	Rs.8,000/-
5	Medical Cover	Rs.2000/-
6	Book Grant	Rs.3000/-
Total Amount		**Rs. 51,400/-**

M.Tech and Ph.D students were given scholarships and fellowships as per Government of India norms

7.3 Administration & Other Units

7.3.1 Administration

Academics

Dr. Vinay Kumar Dadhwal	Director

Deans

Dr. A Chandrasekar	Academics
Dr. Raju K George	Research and Development & Student Welfare
Dr. Kurien Issac K	Intellectual Property Rights & Continuing Education
Dr. Kuruvilla Joseph	Students Activities

Officers

Dr. A Chandrasekar	Registrar
Dr. Sennaraj V	Deputy Registrar (Academics)
Shri. R Hari Prasad	Deputy Registrar (Finance)
Smt. Bindya K R	Deputy Registrar (Administration)
Shri. Mohan Sukumar	Scientist/Engineer 'SF' (Computer System Group)
Shri. Ramanathan S	Senior Administrative Officers
Shri. Subash Chandran M B Shri. Rakesh R Menon	Senior Purchase & Stores Officers
Shri. Vinod Kaimal K P	Senior Manager- Canteen Services
Shri. Pradeep Kumar K R	Administrative Officer (In Charge of Hostel & Transport)
Smt. Rajeena Beegam S Smt. Reny Thomas	Senior Accounts Officers
Shri. Jayapal R	Senior Hindi Officer
Shri. Abdunnasar A	Library Officer-D

7.3.2 Placement Cell

The Placement Cell at IIST continually liaise with industry, R&D organizations, and management Institutions, with the vision of Training, Career-Guidance, Internship/Project, and Campus Placements for our post graduate and undergraduate students. The Placement Officers in charge of the Placement Cell are Dr. Deepak Mishra, Associate Professor, Department of Avionics and Dr. Pradeep Kumar P, Assistant Professor, Department of Aerospace Engineering.

In the last year several companies/R&D institutions/Management firms, have registered with the Placement Cell, through an online job portal for the purpose of placement and internship. The Companies /Organizations are welcome to contact the Placement Cell for further details and discussions. Companies visited us during the period April 2017 to March 2018 includes M/s Finisar Technology, M/s Viasat, M/s Tata Advance Systems, M/s Agnikul Cosmos, M/s Flytxt Mobile, M/s Intel Technology, M/s Mercedes Benz, M/s Delta Electronics, M/s Tata Consultancy Services, M/s System Control, M/s Continental Automotives, M/s ZF India Pvt Ltd, M/s Team Indus, M/s SatSure Ltd. The list of Invited talks arranged by the placement cell and the list of B.Tech and M.Tech students placed at various industries are given in the following tables. For the year April 2017 to March 2018, the maximum package [CTC] was 13 Lakhs for M.Tech students and 7.5 for B.Tech students. The average package for M.Tech students is 10.5 and 6.1 for B.Tech students.

Invited Talks / Workshops conducted by Placement Cell

Sl. No.	Company	Visited Personnel	Event
1	INTEL	• Mr.Pranav Nair • Mr.Jay Mahalingam	Artificial Intelligence and Machine Learning

Internship for M.Tech (Batch: 2017-2019) Project work outside IIST

Sl. No.	Name of the Student	Course	Internship
1	Chirag S	Material Science and Technology	CMSC
2	Neelima P	Material Science and Technology	VSSC
3	Aniket S Raikwar	Material Science and Technology	CSIR

WIWA, Cultural Development Organization based in Trivandrum conducted the workshop for Administrative, technical, transport services, canteen, cleaning and janitorial services staff. Dr. Bismi Gopalakrishnan (Associate Professor, Dept. of Law, University of Kerala) conducted the session for M. Tech and Ph.D students and project staff. Dr. Gita Gopal, renowned social activist and former staff member of the World Bank, Washington DC and former Gender Advisor to the Government of

Kerala conducted the session for faculty members and officers. Various aspects related to gender equality and sexual harassment at work place was discussed during these sessions. The students, faculty members and staff members opined that the programme was very effective and useful.

7.3.3 Official Language Cell

Hindi Section And Official Language Implementation Committee

IIST has a full fledged Hindi Section which not only caters to the Constitutional and Statutory requirements regarding the Official Language, Hindi, but also creates a conducive environment for the officials of the Institute to learn Hindi and work in Hindi. Implementation of Hindi in IIST continued with vigor during the year.

Major activities related to policy implementation

- Four Hindi Workshops. June 20-21, 2017 (technical staff), September 21, 2017 (faculty members), December 27-28 (Staff) and March 12, 2018 (officers).
- Four Quarterly meetings of the OLIC (June 7, Seot 28, Dec 28, 2017 and March 15, 2018) in order to review the progress in the implementation of OL.
- Hindi Fortnight celebrations (September 20 - October 4, 2017)
- World Hindi Day (10, 11 & 17 January, 2018) World Hindi Day – (January 10, 11, 17., 2018).
- All letters, directory, records certificates were bilingualized.
- Incentive scheme for doing official work in Hindi was continued.

Participation in various programmes:-

- Second meeting of TOLIC held on February 21, 2018.
- Inter TOLIC Official Language Conference, HLL Life Care Ltd. The employees of the Institute participated in Rajbhasha Utsav held under the auspices of TOLIC and Smt. Reny Thomas, Sr. Accounts Officer won First Prize in Recitation and second prize in Extempore Speech.
- R. Jayapal, Official Language Orientation Programme, Department of Space, ISTRAC, Lucknow, November, 2017.
- Smt. Cimy Asaf & Shri. Abhay Jain, Hindi Technical Seminar, VSSC, Thiruvananthapuram, September, 2017.

Papers presented in seminars / conferences during the year 2017 – 18

- R.Jayapal राजभाषाहिंदी और तकनीकीअनुवाद ‘ आंशिकअवकल समीकरण दृष्टिकोणकेप्रयोगसे प्रतिबिंबसंगलन, Inter Centre Hindi Technical Seminar - 2017, PRL , Ahemedabad April,2017

- R. Jayapal, ' राजभाषाहिंदीकाउज्जवलभविष्य', Hindi Technical Seminar - 2017, VSSC, Thiruvananthapuram,12th September, 2017
- Cimy Asaf, आंशिकअवकलसमीकरणदृष्टिकोणकेप्रयोगसेप्रतिबिंबसं, Inter Centre Hindi Technical Seminar - 2017, PRL , Ahemedabad, April, 2017
- Cimy Asaf, गलन, Inter Centre Hindi Technical Seminar - 2017, PRL , Ahemedabad, April, 2017

7.3.4 SC/ ST Cell

The Scheduled Caste/Scheduled Tribes Cell in the institute promotes the special interests of employees and students in the reserved category. It is expected to provide special inputs in areas where the students experience difficulties. It also functions as a Grievances Redressal Cell for the Grievances of SC/ST students and employees of the institute and renders them necessary help in solving their academic as well as administrative problems.

7.3.5 Public Information Office

The Institute adopted the Right to Information Act, 2005 and has disseminated required information in a time bound manner. Shri S. Ramanathan, Senior Administrative Officer (Recruitment and Review) is the Assistant Public Information Officer (APIO).

RTI Status

Application Received through CPIO and otherwise	Information forwarded to CPIO	Appeal	CIC Hearing
76	76	07	02

7.3.6 Gender Sensitization Cell

For promoting gender sensitivity and raising awareness on gender equality, gender sensitization committee organized awareness programmes for the staff and students of

IIST during June-August 2017.The work shop was arranged in different sessions for faculty, staff and students.

7.3.7 Internal Complaints Committee

In pursuance of UGC (Prevention, prohibition and redressal of sexual harassment of women employees and students in higher educational institutions) Regulations, 2015 read with Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 an Internal Complaints Committee was set up by Director IIST vide office order 424 dated 17.12.2015 in IIST. The Committee facilitate gender sensitive and congenial environment in the Institute and comply with the obligations and duties laid out for the prevention, prohibition and redressal of sexual harassment of female employees and students. As part of imparting awareness to the female employees and students, the committee has displayedthe rules and penalties on sexual harassment in noticeable locations in the form of posters within the campus. Also as per the direction given by UGC the online complaint management system titled Sexual Harassment electronic-Box (She-Box), a platform for the women working or visiting any office of central government (Central Ministries, Departments, Public Sector Undertakings, Autonomous Bodies and Institutions etc.) to file complaints related to sexual harassment at work place under the SH Act has also been implemented.

7.3.8 Alumni Cell

With a vision to strengthen the activities of IIST alumni and to channelize them for the growth and development of the institute, IIST has formed an Alumni forum to coordinate the activities of alumni, with Dr. Shaijumon as the co-ordinator. During the year, an alumni website (alumni.iist.ac.in) has been created to facilitate the networking of alumni and sharing information between them. An email id has been created for alumni activities **'alumni@iist.ac.in'** for enabling the alumni to contact the institute. The website is open for alumni to register themselves. Alumni members participated in various institute events. About twenty alumni participated in the interaction program with UGC Expert team who visited IIST during 29-31 January 2018. Mr. Mustafa Shahid (B Tech 2013-17 batch) was the quiz master for the Swachh Bharath quiz organized on 20th February 2018 as part of Swachh Bharath Pakhwada in IIST. Many IIST alumni contributed as program judges, advisors and fund raisers in conducting during Conscientia and Dhanak.


VYOM

EVENTS, VISITS & OUTREACH

8. EVENTS, VISITS & OUTREACH

IIST organised a number of Seminars, Conferences and Workshops to disseminate research findings as well as to provide opportunity for IIST students and scholars to participate and learn from such events. In addition, a large number of national festivals and other earmarked days were celebrated with great fervor.

8.1 Conference, Workshop, Training Organised by IIST

Last year, IIST had organized 11 national level workshops and conferences in various areas of space science, space technology, culture and humanities with a cumulative participation of over 450 students and active researchers.

Sl No	Title	Duration	Department
1	Astronomy Oympiad Nurture Camp	Dec10-20, 2017	Earth and Space Sciences
2	Theorising Space: a three day conference	Dec 14-16 2017	Humanities
3	Astronomy and Astrophysics winter school	Dec 6-15, 2017	Earth and Space Sciences
4	GIS Day 2017	Nov 21, 2017	Earth and Space Sciences
5	3DPCM: One day workshop with hands-on training on 3D LiDAR point cloud processing visualization	Oct 12, 2017	Earth and Space Sciences
6	One day workshop on remote sensing applications in association with ISRS and ISG trivandrum chapter	Sept 28, 2017	Earth and Space Sciences
7	One day workshop on Introduction to Deep Learning and its applications	Jun 22, 2017	Avionics
8	Geoconnect 2017- Advanced remote sensing techniques for agriculture and forestry	Jun12-16 2017	Earth and Space Sciences
9	Control systems engineering and design	Jun 6-9 , 2017	Avionics
10	Young Talent Nurture (YTN)	Jun 1-14, 2017	Mathematics
11	National Conference on Recent Trends in tha study of Compact Objects : Theory and Observation (RETCO III)	Jun5-7, 2017	Earth and Space Sciences

YTN-Programme

Department of Mathematics, IIST has been conducting "Young Talent Nurture (YTN)" programme in different levels since 2013. This is a two-week programme, which aims at nurturing young mathematical talents through promotion of pathological questioning, logical and critical thinking and problem solving, and to prepare them for higher aspects of Mathematics. It targets graduate and post graduate students from various colleges/universities/institutes of our country with Mathematics as one of their subject under study as the participants (maximum up to 40). This programme is financially supported by IIST. In the year 2017, YTN-programme was conducted targeting the students who have completed first year of B.Sc. or second-semester B.Tech./Integrated M.Sc. during 22nd May to 3rd June at IIST.

Astronomy School

The Department of Earth & Space Sciences of IIST organized its annual Astronomy & Astrophysics School from December 6 - 15, 2017.The school which included lectures and hands-on data analysis lab sessions were handled by the astronomy faculty members of the department. The purpose of the school was meant to acquaint students with the basics of astrophysics. Forty post-graduate and engineering students from universities and colleges across the country were selected for the program. This was for the sixth consecutive year that the department was conducting this program for students nation-wide.

8.2 Visits & Lectures by Foreign Distinguished Guests

39 speakers of national and international *importance* visited the institute during the last year. Such *lectures* provide a forum to enhance scholarly and scientific learning and to stimulate the intellectual climate of IIST.

Sl No	Date of Lecture	Name & Address of the speaker	Topic
1.	May 9, 2017	Dr. Deepak Jaiswal, University of Campinas, Brazil	Role of biofuel energy crops to displace fossil fuels
2.	July 5, 2017	Dr.Prashant Deshlahra Department of Chemical and Biological Engineering, Tufts University	Rational Design of Catalytic Materials for Improved Hydrocarbon Utilization
3.	July 6, 2017	Virendra Sarohia, Programme Manager	Interaction

4.	Aug 23-25, 2017	Prof. Paula Benaglia, Dy. Director and senior Professor- Argentine Institute of Radio Astronomy	**Interaction**
5.	Sept 9, 2017	Dr Thomas Oommen Associate Professor, Michigan Technological University, USA	Theoretical Aspects of Interferometric Synthetic Aperture Radar (InSAR) Technology.
6.	Sept 19, 2017	Mr.Curtis Chan Global Programming Officer, E-Teacher Program Educational and Cultural Affairs, US Department of State. & Ms.Ratna Mukherjee Program Advisor, US Consulate General, Chennai.	Developing learning materials for English language learners.
7.	Oct 12-13, 2017	Dr. Martin Isenburg, Owner & CEO of Rapidlasso, Germany, C/o Dr. Remya	Interaction
8.	Nov 2, 2017	Mr. Christoph francois Robert Theroude, System Manager, Airbus System Defence & Space, France	Interaction
9.	Dec 1, 2017	Dr. Jens Eickhoff, University of Stutgart, Germany	Interaction
10.	Dec7, 2017	Dr. Ramaraja P Ramasamy Inaugural Chair and Associate Professor School of Chemical, Materials and Biomedical Eng., Director, Nano Electrochemistry Laboratory, University of Georgia	Transdisciplinary Approaches to Traditional Electrochemistry
11.	Dec 20, 2017	Dr. Ricardo Ruiz-Baizer (University of Oxford)	Interaction
12.	Dec 21, 2017	Dr. Zachariah Oommen, Director of Forensic Science Program at Albany State University, Georgia USA.	Instrumental Techniques for Forensic Physical Evidences

13.	Jan 30,2018	Dr. Henry Throop NASA-funded Senior Scientist, Planetary Science Institute, Arizona, USA	NASA's New Horizons Mission to Pluto and Beyond
14.	Jan 31,2018	Dr. Henry Throop NASA-funded Senior Scientist, Planetary Science Institute, Arizona, USA	Are We Alone in the Universe?
15.	Feb 12, 2018	Ivan peter wright , Monica Mary Grady , UK	Interaction
16.	Feb 20, 2018	Kolar Ramesh, Senior Director, Naval Research, USA	Interaction
17.	March 8, 2018	Dr. Ing. Franz-Josef Behr, Stuttgart University of Applied Sciences, Germany	Interaction
18.	March14, 2018	Dr. Kiran Alapetty, Mrs. Madhavi Naga Vengata Asso Director, National Exposure Research Lab, USA	Regional Climate and Weather Models
19.	March15, 2018	Dr. Darious Modarress, Chief technology officer, Measurement science Enterprises, USA,	Interaction

8.3 Institute Lectures by Invited Academia

Sl No	Date of Lecture	Name & Address of the speaker	Topic
1.	April 5,2017	Shri Lazar T. Chitilappilly, Project Director, Air Breathing Propulsion Project, VSSC, ISRO, Trivandrum	Scramjet Engine Development Flight Testing
2.	April 7,2017	Dr.Manoj A S Associate Professor,ICT Academy of Kerala, Trivandrum.	Team work and Assertiveness in profession
3.	July 5,2017	Dr. Yogesh Bhumkar Assistant professor in the School of Mechanical Sciences, IIT Bhubaneswar.	Design of Optimized Natural Laminar Flow Aerofoil for Transport Aircrafts

4.	July 7, 2017	Prof. Suresh Kumar (IIT Bombay)	Risk-sensitive control of reflected diffusions in orthrant.
5.	Sept 6, 2017	Dr Antony Palackal Associate Professor, Department of Sociology, University of Kerala	Social Movements among Tribals of Kerala
6.	Sep 07, 2017	Sandip Sankar Roy Scientist,NRSC-ISRO,Hyderabad	Feed Antenna for Low Earth Orbit Satellites Tracking: An Overview and Recent Activities in NRSC Hyderabad
7.	Sept 15, 2017	Sandesh Bhimrao Mane Scientist,NRSC-ISRO,Hyderabad	Design & Development of Feed Systems for Low Earth Orbit Satellites Tracking by Joint Collaboration of IIST and NRSC Hyderabad
8.	Sept 20, 2017	Dr. Arun Rahul S IIT Palakkad	Model Predictive Control of Hybrid Multilevel Inverters
9.	Sept 20, 2017	Dr. Swaroop Sahoo IIT Palakkad	Microwave radiometers
10.	Sept 20, 2017	Dr. Arvind Ajoy IIT Palakkad	Multiscale approach to modelling steep slope devices
11.	Sept 28, 2017	Prof. Animesh Biswas NIT, Durgapur, IIT Kanpur, India	Substrate Integrated Waveguides : Early Development and Recent Trends
12.	Oct 13, 2017	Dr. V. Mahendran and Dr. Chandramani Singh	Wireless Networks
13.	Oct 19, 2017	Dr. V. Haridas, Assoc. Professor, Department of Chemistry, IIT Delhi	Topology to self-assembly using peptides
14.	Oct 25, 2017	Dr.V.K.Vijaya Kumar Chief Investment Strategist Geojit BNP Paribas Ltd.	Operations of Stock markets and live demo of its operations
15.	Nov 6, 2017	Dr.Vidhya Chakrapani	Defect Engineering for Modulating Electronic and Electrochemical Properties of Transition Metal Oxide
16.	November17, 2017	Prof. Parag Bhargava IIT Bomby	**Inspiration for innovation and endless motivation in life**

17.	Nov 29-30, 2017	Dr. Manil T Mohan (ISI Bangalore)	Some Recent Progress in Quasilinear Hyperbolic Systems: New Local Solvability Methods and Stochastic Analysis
18.	Jan 12, 2018	Prof. Parthasarathy Sensarma	Automatic resonance frequency tuning for load resonant converter
19.	Feb 2, 2018	Dr. V. Siva Kumar G Kelekanjeri GE India, Technology Centre, Bangalore	Detection of microstructure evolution in Waspaloy using electrically based techniques
20.	Feb 2, 2018	Dr.Ambeeshmon Head, Department of Management University of Kerala.	Personality Development

8.4 Events / Day Celebrations

8.4.1 Independence Day and Republic Day

Independence Day and Republic Day celebrations were marked by unfurling of tricolor by Director, IIST followed by colourful cultural programs, distribution of awards and other events.

Other regional festivals such as Onam, Holi, Ganesh Chathurthi, Diwali, Raksha Bhandan were also celebrated with pooja, wonderful food, exhilarating music and captivating dance.

8.4.2 Onam

Onam, the biggest and the most important festival of the state of Kerala was celebrated in style in IIST on September 18, 2018. Dr. Divya S Iyer, Sub Collector, Trivandrum was the guest of honour. The campus was lit up by intricately decorated athapookalam and awe-inspiring performances by students and staff, followed by sumptuous onam feast and onam games.

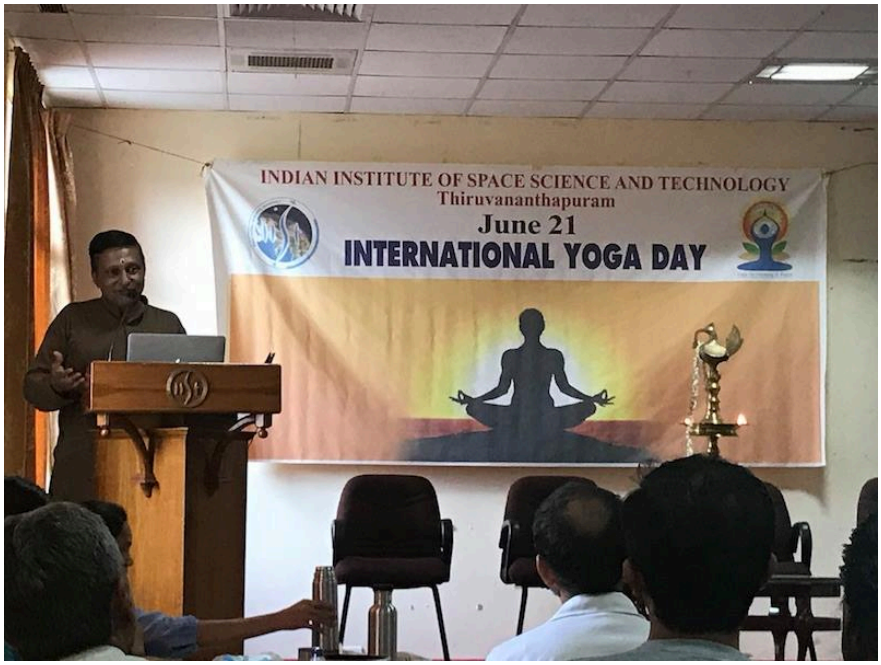
8.4.3 Holi

The vibrancy of colors is something that brings in a lot of positivity in our lives and Holi being the festival of colours was actually a day worth rejoicing. On the day of Holi students of IIST played with colours with their friends in the campus followed by special lunch. To make it more eco friendly, use of chemical colours, burning of wood and wasting of water was avoided.

8.4.4 World Environment Day

World Environment day was celebrated on June 5, 2017 for encouraging awareness and promote positive actions for the protection of the environment. In this connection, Eco Club Council, IIST and CMD, IIST had arranged planting of tree sapling in the IIST Campus. Director, IIST inaugurated the programme.

8.4.5 International Yoga Day



The 4th International Yoga Day was celebrated on June 21, 2017 at IIST. The Director of our Institute, Dr.V K Dadhwal officially inaugurated the Day Celebration. Yoga Sessions were held by Sri. T Sreekumaran Nair, and lectures were delivered on "Pathanjali Yoga Sutra" by Sri Sankara Narayana Joi and "Healing from Within" by Dr Ram Manohar.

8.4.6 Freshers Day

The first year students were bestowed a warm welcome to the campus by the second year IISTians on the Fresher's Day on August 9, 2017. This was followed by an orientation about the various clubs and activities of IIST and a membership drive for the various clubs.

8.4.7 Teachers Day

On September 5, 2017, Nirmaan, the social outreach club of IIST honoured the teachers of IIST as a mark of respect and appreciation for their special contributions to IIST, in their particular field area, and to the student community in general.

8.4.8 Dr. B. R. Ambedkar Day

The 127th birth Anniversary celebration of Dr. B. R Ambedkar was celebrated on April 18 , 2017 at IIST. The Chief Guest for the programmes was **Dr. Ananthakumar S, Sr. Principal Scientist, NIIST, Thiruvananthapuram.**

8.4.9 Sadbhavana Diwas

The birth anniversary of Late Prime minister Sri Rajiv Gandhi was observed as Sadbhavana Diwas on August 18, 2018. As part of it a pledge to promote good will and eschew violence was taken by the employees of IIST.

8.4.10 Vigilance Awareness Week

As part of observance of Vigilance Awareness Week -2017 all the employees took the e-integrity pledge on November 8, 2017.

8.4.11 Swatch Bharath Abhiyan Implementation

On February 12, 2018 Director, IIST formally inaugurated the Swachhta Pakhwada in IIST by dedicating the newly installed "NO WASTE" Fuel Free Solid Waste Management System with Air Pollution Control Device Attachment to IIST campus. This incinerator was a special initiative of the Swachh Bharat Abhiyaan implementation Committee of IIST. The total cost of supply and installation of the same was Rs. 8, 48,400/-.

Director IIST along with the staff members also participated in the planting of seedlings in the organic farming area set up on the terrace of Canteen building by

IIST canteen Services. This is a very successful initiative of IIST canteen services wherein slurry from the biogas plant is mainly used as manure.

A Market Study in a nearby market on systems of cleaning was organised by Dr. Ravi.V, Associate Professor, Department of Humanities. Twelve teams visited the nearby market and did a detailed study of the waste generated and systems of waste management currently being practised. They submitted their reports incorporating viable methods for sustainable waste management.

On February 14, 2018 an Essay competition on Eco Hygiene was organised. 15th February 2018 was declared as Clean Class rooms and Offices Day. The complete staff and students cleaned up their respective premises viz. Offices, lecture halls, laboratories and class rooms.

A Short Film competition on "What I can do for Clean India?" was organised by Dr. Babitha Justin, Assistant Professor, Department of Humanities. General cleaning of the outside premises of the Institute was carried out on February 19th 2018.

An Awareness Programme for Cleaning Staff of IIST by Smt. Babitha, Green Village, and Sasthamangalam was organized by Dr. Lekshmi V Nair, Associate Professor, Department of Humanities and Bindya, Deputy Registrar, Administration on February 20, 2018.

The Swachhta Pakhwada **Inter-school Quiz** was held on February 20, 2018 under the guidance of Dr. Shaijumon, Assistant Professor, and IIST. Mr. Mustafa Shahid (Scientist/Engineer C, Vikram Sarabhai Space Centre) served as the **Quiz Master.** The quiz witnessed participation from 13 teams, belonging to classes VIII to X, from nine different schools.

The Student Activities Board organized a Paper-Bag Making Session on February 21, 2018. The event witnessed a participation of over 25 students, representing the various academic branches and years of Indian Institute of Space Science and Technology. Old newspapers were transformed into 200 odd paper-bags within a span of an hour and a half. The bags were later donated to the college cafeteria and a nearby shop, frequented by the neighbouring community and students, alike.

On February 22 2018, an Awareness campaign about cleanliness in nearby schools viz. Govt. High School in Karippur and Christu Jyoti Senior Secondary School in Chullimanoor was organised by Dr. Rajesh V.J., Associate Professor, Department of Earth and Space Sciences & Dr. Jinesh. K. B., Associate Professor, Department of Physics and students Asif Iqbal Kakkassery, Thesniya P. M. and Anna Thomas. They delivered a short lecture on cleanliness and its importance and were able to convey

about the environmental impacts of pollution. They also had close interactions with the students and teachers.

The Valedictory function of the pakwada was organised on March 16, 2018. Registrar, IIST gave away the prizes for all the competitions held. The prize winning short film was aired after the function which was highly appreciated for its simplicity of presentation, innovative angles, characters involved and thought provoking and socially responsible messages involving multi language rendering.

8.5 Visitors to IIST Campus

IIST strongly believes in the importance of outreach programs and in the social responsibility of giving back to the society. Many of the faculty members and students are involved in programs that aid the development of certain sectors such as education and creating awareness among the public about the importance of science and technology. It included 137 talks by the faculty members; training programs offered by IIST and providing summer and winter internship programs for 89 students from other colleges and universities. 8 different colleges and schools with a total number of 22 teachers and 375 students also visited IIST at different periods. The students of IIST as part of the community outreach programs offer remedial classes and training programs to the neighbouring schools and for the students living around IIST. The details are as follows:

Sl. No.	Date	Name of the Institute	No. of Visitors
1	16.03.2018	Holy Cross College (Autonomous), Nagarcoil	Staff Members - 3 Students - 40
2	14.03.2018	Bishop Moore College, Mavelikkara	Teachers - 2 Students - 33
3	23.02.2018	Department of Technology, Shivaji University, Kolhapur, Maharashtra	Teacher - 1 Students - 15
4	15.11.2017	Good shepherd Public School, Thengana	Teachers - 4 Students - 85
5	21.09.2017	St. Albert's College, Ernakulam	Teachers - 2 Students - 13
6	18.07.2017	The School of The Good Shepherd, Akkulam, Trivandrum	Teachers - 5 Students - 147
7	24.03.2017	M E S Keveeyam College, Malappuram	Teachers - 2 Students - 12
8	08.03.2017	St. Stephen's College Uzhavoor, Kottayam	Teachers - 3 Students - 30

8.6 Internship offered to students (External)

Sl No	Department	Institute	No. of Internship offered
1	Aerospace Engineering	NIT, Tiruchirappalli , NIT Karnataka, Surathkal, Anna University, IIT Kanpur, Kanpur, SASTRA University, Thanjavur, SRM University, Chennai Indian Institute Of Engineering Science And Technology Shibpur, West Bengal, Sardar Vallabhbhai NIT Surat, IIT Bombay, Mumbai, NIT, Patna	29

2	Avionics	NIT, Rourkela, NIT Karnataka, Surathkal, Birla Institute Of Technology And Science, Dubai, Madanapalle Institute Of Technology And Science, , Chittoor, TKM College Of Engineering, Kollam	19
3	Chemistry	CSIR-Central Electrochemical Research Institute, Karaikudi, IISER Mohali, Pondicherry University Amrita Vishwa Vidyapeetham,Kollam NIT Warangal, IISER	7
4	Earth and Space Sciences	Cochin University Of Science And Technology IISER,Kolkata, School Of Pure And Applied Physics, Kottayam, IIT Kanpur, Kanpur Anna University, Trinelveli, NIT, Tiruchirappalli International Institute Of Information Technology – Bangalore	8
5	Mathematics	IISER Mohali Government College For Women, Vazhuthacaud IISER Trivandrum	4
6	Physics	IISER, Kolkata, NIT Tiruchirappalli, IIT Kanpur, IISER, Bhopal, Pondicherry University IISER,Thiruvananthapuram International School Of Photonics	11

Winter Internship

Sl No	Department	Institute	No.
1	Aerospace Engineering	Sastra University IIT, Madras NIT, Trichy	11
2	Avionics	IIT Kharagpur	
3	Chemistry	Central University of Gujarat Pondicherry University	

4	Earth & Space Sciences	NIT Calicut	
5	Humanities	Mar Ivanios College	
6	Mathematics	IIT Bhubaneswar NIT, Rourkela,Odisha	
7	Physics	IIT BHU	

8.7 Invited talks by IIST Faculty

Director

Dadhwal V K,

- Remote Sensing at Multiple Wavelengths for Earth Observations. (Guest Talk) in, ISRO STP: 'Space Science Program: Global & ISRO Scenario', PRL Ahmedabad, March 8, 2018
- Providing Near Real Time Earth Observation and GeoSpatial Information for Disaster Management : Experience of NRSC, India. (invited Speaker), In 'Reinforcing Institutional Decision making in Disaster Preparedness and Mitigation', Special Centre for Disaster Research, JNU, New Delhi, Feb 17, 2018.
- Indian EO Program: Climate Observations & Products. (Invited Speaker). 23rd Session of CLIVAR Scientific Steering Group. IITM Pune, Nov 29, 2017
- Use of Meteorological/Hydrological forecasts of events such as Floods and Management of Water Resources. (Invited Talk), In Brainstorm Meeting on Use of Information and Prediction of Climate Variability in management of agriculture and water resources, IITM Pune, Nov 1, 2017.
- Remote Sensing and Geospatial Applications. (Invited Lecture), In ISRO Induction Training Program, VSSC, Thiruvananthapuram. October30, 2017
- Training Activities @ISRO: Challenges, Achievements & Lessons Learnt. (Invited Speaker) "International Seminar on Skills in TVET for Sustainability", NITTS, Kolkata, Oct 28, 2017
- अंतरिक्ष प्रौद्योगिकी और आपदा प्रबंधन. (Chief Guest, Valedictory Function-Hindi Fortnight), MCF Hassan, Oct 12, 2017.
- Mainstreaming Space-based Earth Observations in India: Environment, Governance & a Digital Economy. 49 Bhabha Memorial Lecture), In 60 IETE Annual Convention-'Marching Towards Digital Economy', Sep 17. 2017, Kochi

Department of Aerospace

Chakravarthy P,

- Key note lecture for the international conference on Innovative Developments in Engineering and Advanced Sciences (*IDEAS-2017*), May 2017.
- 'Materials and its performance in aerospace sectors', Society of failure analysis, Tiruchirappalli chapter, March 2018.
- Materials for Rocketry and spacecrafts,Osmania University, March 2018.

Praveen Krishna I R,

- Structural Health Monitoring,MA College of Engineering, Kothamangalam, Kerala. Feb 2018.
- Engineering Mechanics, VIT, School of Mechanical Engineering, Vellore, Tamilnadum, Dec 2017.

Shine S R,

- National Level Conference NCITTMD18, Sivaji college of Engineering and technology, Kanyakumari, October 2017.

Department of Avionics

Anindya Dasgupta,

- Low-frequency dynamic model and control of matrix converter for synchronous applications , Electrical Engineering Dept., IIT Kharagpur, December 2017.

Basudeb Ghosh,

- Wire and Aperture Antennas (b) Computational Electromagnetic Techniques: An introduction, SSN College of Engineering, Tamilnadu, November 2017.

Chinmoy Saha,

- 'Multifunctional Printed Antennas: Concepts and Realization in IIST in Last Half-Decade', SreeRamakrishan Institute of Technology, TN, India, September 2017.
- Photo Conductive Antennas (PCA) for MM Wave and THz Applications: Challenges, DIAT, Pune, India, June 2017.
- Multi-functional Printed Antennas for Modern Wireless Applications: Concept, Design and Realization, CUSAT, Kerala, India., May2017.
- Effective Learning /Teaching of Electromagnetic Engineering: Case Examples, GEC Barton Hill, Trivandrum, Kerala, India, October 2017.

S Chris Prema,

- Efficient Spectrum Utilization using Cognitive Radio, ICRAECC 18, Chunkankadai, March 2018.

B. S. Manoj,

- Resolving Network View Inconsistencies in SDN Control Plane" ,IEEE ANTS 2017, Bhubaneshwar, India, December 2017.
- "Emerging trends in the evolution of Internet" at NCTIMEMIC 2017, LourdesMatha College of Engineering, Trivandrum , April 2017.
- Complex Networks Approach for Data Analysis, Vikram Sarabhai Space Center, October, 2017.

Palash Kumar Basu,

- Development of Field Activated Nano crystalline Metal Oxide based Reliable Gas Sensor: An Alternative of Si based MEMS Microheater, International coference on Nanomaterials : Synthesis, Characterization and Applications, ICN 2018.

Rajesh Joseph Abraham,

- Smart Grids for the Future,3rd National Conference on Future Technologies in Power, Control and Communication Systems, Kollam, March 2018.
- Systems and Control Technologies: Present and Future Directions, International Multi-conference on Computing, Communication, Electrical & Nanotechnology, Kottayam, April 2018.
- Short term course on **Control Systems Engineering and Design**, June 06 – 09, 2017, IIST Trivandrum.

Seena V,

- Polymer and Silicon Microsystems: Developments for Homeland Security to Space Applications, IIT Palakkad, August 2017.
- Polymer MEMS for Environmental Sensing to Space Applications, DST-UKIERI workshop Micro- and Nanotechnologies for Environmental Sensing, IIT Bombay, January 2018.

N. Selvaganesan,

- Nonlinearity and its behavior in power circuits, Faculty development program, MepcoSchelenk Engineering College, Sivakasi, November 2017.
- Shaping Limit Cycle Performance of Fractional-Order Controllers for Plants Containing Backlash/Relay, Govt. College of Engineering, Thrissur, December 2017.
- Eliminating the limit cycle oscillation for digitally controlled DC-DC converter, National Power Engineering Conference –NPEC 2018, TCE, Madurai, March 2018.

J. Sheeba Rani,

- Challenges in FPGA based Bio-signal Processing, 2-Day National Level Seminar on Research Perspectives in FPGA-based Medical Electronic Devices

for Healthcare Applications, Indian Council of Medical Research (ICMR), PSG College of Technology, Coimbatore , March 2018.

- TEQIP - III sponsored National Conference on Advances in Biomedical Engineering (NCACBE 2018) , PSG College of Technology, Coimbatore, Tamil Nadu, 23 -24 March 2018.
- National Level Technical Event Organized by Dept of Electronics and Communication, C.S.I Institute of Technology, Thovalai, Tamil Nadu , Febraury 2018.

Vineeth B. S,

- Introduction to queueing theory - for 8th semester B.Tech students, Government College of Engineering, Wayanad, March 2018.
- Optimal Association of Wireless Devices to Cellular and Wi-Fi Base Stations - NCC, 2018.
- Throughput Optimal Scheduling for Wireless Downlinks with Reconfiguration Delay - NCC, 2018.
- Statistical inference for data analysis- Faculty development programme, College of Engineering, Pune, December 2017.
- Introduction to random processes, Markov chains - for M.Tech students, Government College of Engineering, Kannur, November 2017.
- Introduction to Bayesian Inference - VSSC HRDD programme, October 2017.

Department of Chemistry

Gomathi N,

- Autocatalytic silver plating of RF waveguides-Optimization studies organised by Department of Electronics and communications engineering, Sri Ramakrishna Engineering College, Coimbatore, August, 2017
- Simultaneous determination of ascorbic acid, dopamine, uric acid by a novel electrochemical sensor based on N_2/Ar RF plasma assisted graphene nanosheet/graphene nanoribbon, 2331st ECS meeting held in New Orleans, Louisiana, USA , June 2017.

Jobin Cyriac,

- Surface enhanced Raman spectroscopy (SERS) Concepts and applications, Kuriakose Elias College Mannanam, Kottayam , November 2018
- Raman Spectroscopy for Screening Trace Chemicals,St. Berchmans' College Changanassery,January 2018.
- Advances inMass Spectrometry, Govt. College Nattakom, Kottayam, November 2017.

- Participated in MRSI (Materials Research Society of India), Thiruvananthapuram Chapter's outreach programmeon Materials Science for College Students at St. Berchmans' College Changanassery (Jan 07-09, 2018).

Kuruvilla Joseph,

- KSCSTE Sponsored National Seminar on Emerging Trends in Nanocomposites at St. Thomas College, Palai, October 2017.
- International Summit for packaging Industry at Nehru Place, New Delhi, October 2017.
- DST - Internship Science Camp at Central University of Kerala, Kasaragod, December 2017.
- Biobased composites at the Biomaterials for Tomorrow (B4T) conference at Kochi Marriot Hotel, Kochi, January 2018
- National Seminar on Recent Trends in Material Science and Technology , St. Berchmans College, Changanassery,February 2018.
- National Conference on Recent Advances in Material Science and Technology, Ethiraj College, Chennai , February 2018.
- Surface Engineered Nanosystems for Bio-Medical Applictions' , International Conference on Advanced Nanostructures (ICAN - 2018), Catholicate College, Pathanamthitta, March 2018.
- Bishop Moore College, Mavelikara in connection with the DBT Star College Scheme, March 2018.

Marry Gladis J,

- Retortion of natural Ecosystem-Innovations for Resilience, International Conference on Global Climate Change-Current Trends and Management, St. Mary's College (autonomous), Thoothukudi, Tamilnadu, September 2017.
- Invited talk on Advanced materials for future batteries in the national Seminar on Advanced Functional materials (NSAFM 2017) Organized by MRSI-Trivandrum Chapter &Mar Ivanious College, Trivandrum, December 2017.
- Space Technology for Environmental Monitoring and Sustainable Development in the Seminar on Environmental Sustainability-The present Scenario, Organized by Holycross College, Nagercoil, January 2018.

K Y Sandhya,

- Outreach programme of IIST-MRSI-Invited lecture at Mar-Ivanois College, Thiruvananthapuram.
- Outreach programme of IIST-MRSI-Invited lecture at Mar-Ivanois college, Thiruvananthapuram (Dec, 2017)
- Press for Progress, International Women's Day Celebration, Senate Chamber, University of Kerala, March 2018
- Molecular design for smart materials, MRSI outreach program at Mar Ivanios College, Thiruvananthapuram , December 2017

Sreelekshmi K G,

- Chemical sensors for environmental applications. Lecture delivered during NVMACC-2017 at Department of Chemistry, Government College, Chittur, December, 2017.
- Chemistry of tailored intermolecular interactions: From Molecules to Supramolecular Materials. Department of Chemistry, Kariavattom , December 2017.
- Molecular design for smart materials. National Conference organised as part of MRSI outreach program at Mar Ivanios College, Thiruvananthapuram, December 2017.
- Molecular Engineering of 1,3-Thiazole: De novo design and synthesis of multiheterocyclic cores for multifunctional materials: . Prof. R. H. Sahasrabudhey Birth Centenary Symposium Scientific program CYHOC ,Residency Towers, Thiruvananthapuram, December 2017.
- An introduction to Combinatorial Chemistry.National Seminar on Recent Advances in Chemical Sciences PG Department of Chemistry, Government College Madappally, Vadakara, January, 2018.
- Combinatorial methods and high-throughput screening - in materials research. National Seminar on Recent Advances in Chemical Sciences PG Department of Chemistry, Government College Madappally, Vadakara, January, 2018
- Smart materials: Design and applications. National Conference on Recent Trends in Materials Science and Technology organised as part of MRSI outreach program at St Berchmans College, Changanassery, February 2018.
- Organic functional materials: National Seminar on Reaching the Unreached Through Science and Technology (RURTST-2018) jointly organised by SN College, Kollam and the Indian Science Congress Association, February 2018
- Heterocyclic organic functional materials. Recent Advances in Materials Science (CHEM-RAMS-2018) organised by Department of Chemistry, Holy Cross College, Nagercoil, February 2018.
- Multifunctional Organic Materials, Two Day National Seminar on Advanced Materials organised by School of Chemical Sciences, Kannur University, March 2018.
- Education – a priceless gadget for a lifetime. Post Graduate Induction program, University of Kerala, November, 2017.

Department of ESS

A Chandrasekar,

- *Monsoon inversions over India - A Numerical Study, National Workshop on Monsoon ,Department of Atmospheric Sciences, Cochin University of Science and Technology at Cochin, March 2018.*
- *Impact of 4DVAR assimilation of satellite observations to improve the forecast of tropical cyclones in the Indian Ocean region, Centre for Earth, Ocean and Atmospheric Sciences, University of Hyderabad, Hyderabad, February 2018.*

Rajesh V.J,

- Geology of Moon and Significance of Terrestrial Analogue Sites in Planetary Exploration, Challenges and Advances in Planetary Science CAPS 2017,Centre for Earth Sciences, IISc Bangalore, September 2017.
- Geology of Mars from MRO observations, Symposium on Vision & Explorations for Planetary Sciences in Decades 2020-2060- Brain Storming Session PRL Ahmedabad, November 2017.
- Geology of Mars, Keynote address, UGC-SAP DRSII (2013-2018) seminar and talks of the Current Trends in the Earth System Sciences (CTESS2017),Dept of Geology, University of Kerala, Trivandrum, February 2018.

A M Ramiya,

- Remote Sensing: An overview, National workshop on Geomatics, Marian Engineering College & Indian Society of Remote Sensing, July 2017.
- Field Data acquisition methods for terrain modeling, College of Engineering,
- Terrain modelling withfocus on LiDAR, Trivandrum, December 2017.

Sarita Vig,

- XXXV Astronomical Society of India Meeting, Jaipur, March 2017.
- Homi Bhabha Centre for Science Education (HBCSE-TIFR) for International Astronomy Olympiad students.
- Astronomy Nurture Camp for past Astronomy Olympiad students – Dec 2017.
- Homi Bhabha Centre for Science Education (HBCSE-TIFR) for International Astronomy Olympiad students.

Department of Humanities

Gigy J Alex,

- Reading Socio-cultural Spaces in Contemporary Malayalam Cinema. MES College Nedumkandam, January 2018.
- Research in Literature: Changing Paradigms: Research and Post Graduate Department of English. Newman College, Thodupuzha, March, 2018.

Ravi V,

- 'Value engineering' for Faculty Development Program on "Design and Engineering", Department of Mechanical Engineering, College of Engineering, Trivandrum, December 2017.
- Manufacturing strategies', Department of Management Studies, National Institute of Technology, Trichy, February 2018.
- International Conference on India Vision 2020: Competing in a World of Sectors Without Borders, March 2018.
- Concurrent engineering, Department of Management Studies, National Institute of Technology, Trichy, March 2018.

Lekshmi V Nair,

- Tribal Health and Emerging Issues, Loyola College, Chennai, July 2017

- Qualitative Research Methodology at Indian Social Institute, Bangalore, January 2018.

Shaijumon C S,

- "Economic Reforms in India", Central University of Kerala, Kasargod, March, 2018.
- "Union Budget 2018-19", Dept of Economics, Fatima Matha National College, Kollam, February, 2018.
- Macroeconomic Impact of GST, Lecture at the Dept of Economics, St. Theresa's College, Ernakulam, February 2018.
- Need of Interdisciplinary Approach in Social Science Research, Special Winter School Refresher Course for University Teachers, UGC Human Resource Development Center, University of Calicut, December 2017.
- GST, NSS Hindu College, Pandalam, August 2017.

Babitha Justin,

- Women and Society, Central University of Kerala Thiruvanathapuram Centre, March,2018.
- Anees Salim's world of books, Sadakkathullah Appa College, Nagarcoil,February, 2018.
- Creative writings and Trends, St. John's College, Anchal, January, 2018.
- I cook my own feast, Kritya International poetry Festival, Kerala, November, 2017.
- Children and Creativities, carmel GHSS, Thiruvanathapuram, November, 2017.
- Chaired a session in the 3 day national Seminar on Diaspora Reimagined : The Politics of Presentation, Institute of English, Thiruvanathapuram, october, 2017.
- Women's travel Writing, TM Jacob Memorial Govt. College, Koothattukulam, September, 2017.
- Invited poet, Dakshina: A South Indian Poetry festival, VJT Hall, Thiruvanathapuram, September, 2017.
- How to fail Successfully, Lecole Chempaka, Thiruvanathapuram, July 2017.

Department of Mathematics

Kaushik Mukherjee

- Linear Algebra, AICTE sponsored short term course on Applied Mathematics for Engineering Research, College of Engineering Trivandrum, Kerala, December, 2017.

Natarajan E

- Nonlinear Partial Differential Equations: Theory and Numerics, IIT Madras, January 2018.

Prosenjit Das,

- Rank and Rigidity of Locally Nilpotent Derivations of Affine Fibrations at CAAG-2017, IISER Pune, December 2017.

Raju K George,

- Parul Institute of Engineering and Technology, Gujrat, May 2017.

Sarvesh Kumar,

- Dynamical system and chaos theory (2 lectures), CET, January, 2018
- National workshop on " Numerical Techniques for differential equations", Periyar University, Salem, 16-17 March, 2018.

Subrahamanian Moosath K S,

- On Various Geometries, Inspire students, IISER Tvm, 22nd June 2017.
- Geometry of our living space, Refresher Course, ASC University of Calicut, 23rd June 2017.
- On Divergence Functions, KG College of Arts and Sciences Coimbatore, 23rd September2017.
- Differential Geometry, Ettumanoorappan College, Kottayam, 26th October 2017.
- Equivallence of parametrized n-surface and n-surface, DB College Thalayolaparambu, 7th November 2017.
- Exponential and q-Exponential Family of Distributions - A Geometric Approach, HP Science Congress, Shimla, 20th , 21st November 2017.
- On Topology, BCM College Kottayam, 28th November2017.
- n-Surfaces in R^n+1, University College, Tvm, 15th December 2017.
- Linear Algebra, Winter School in Mathematics to the memory of HJ Bhabha, Central University, Tamilnadu, 18th December 2017 to 23rd December 2017.
- Matrix – An oblong arrangement of terms, DST Inspire Programme, Central University, Kasaragod, 29th December 2017.
- Statistical Manifolds as hyper surfaces, International Conference On Current Scenario In Pure And Applied Mathematics (ICCSPAM2018), Kongunadu Arts and Science College, Coimbatore, 16th February 2018.

Department of Physics

Jinesh K B,

- Evolution of Memory Technology,International Conference on Thin films and Applications, Mahatma Gandhi University, Kerala, February 2018.
- Atomic Layer Deposition: from Materials to Technology, International conference on Scientific Instrumentation, Cochin University of Science and Technology, Cochin. , February 2018.
- Quantum mechanics in action: scanning tunneling microscope, Workshop on quantum mechanics, SB College, Changanassery, December 2017.
- Atomic Layer Deposition: from Materials to Applications, ISSS Conference, Cochin University of Science and Technology, Cochin July 2017.

- The science of Miniaturization,National Science Day Celebration, IISU, Vattiyoorkavu, March 2018.
- Quantum Alzheimer's- the future of electronic memory: its all about a USB; National Conference on Advanced Materials, December 2017.
- Technology based on Graphene – an overview: MRSI symposium, Mar Ivanios College, January 2018.
- Graphene derivatives for optoelectronics, National Conference on advanced materials, CMS College, Kottayam, January 2018.
- **Seeing and playing with Atoms**, National Seminar on Foundations of Physics, Government College, Nedumangad, 12 January 2018.
- **Intellectual Property Rights and Patents**; Kerala University , October 2017.
- **From Nano to Nano**, World Space Week, LPSC Trivandrum, October 2017.

Kuntala Bhattacharjee

- Tailored nano-structures of MoS_2: A simple liquid phase exfoliation method, Academic Session, Alumni Association, Institute of Physics, Bhubaneswar, India, 12 April 2017.
- Structural and optical characterizations of MoS_2nanostructures, National Seminar on Advances in Functional Materials, 19-20 September 2017.

Narayanamurthy C S,

- ICAOP -2017, HISSAR, Haryana, XLI OSI Symposium, November 2017.
- WRAP 2017, Mahindra Ecole, Hyderabad, December 2017.
- PSG R K C Women, Coimbatore, January 2018.
- CUSAT, Science Day annual meet, Kochi, February 2018.

J Solomon Ivan,

- INTOPMAA-17,IIST , August 2017.

Sudheesh Chethil,

- Quantum Dynamics, National Seminar on Modern Trends in Physics, Department of Physics, University College Thiruvananthapuram, 23-November 2017
- Quantum Information, Padartha 2018, Department of Physics, St.Xavier's College, Thumba, March 2018.

R Sudharshan Kaarthik,

- Founder and Advisor of IEEE Industry Applications Society Student Branch Chapter at IIST, Thiruvananthapuram. This gives a platform to conduct workshops in technical and soft skill areas in the field of Power Electronics and Industrial Applications.
- Contributor to open source online software and hardware resources in Gitlab for several digital controller platforms, hardware modules etc.
- Technical Program Chair for IEEE International Conference on Power Electronics, Drives and Renewable Energy (PEDRE) to be conducted by IEEE Kerala Section.

STUDENTS EXTRA-CURRICULAR ACTIVITIES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CE SCIENCE AND TECHNOLOGY
ANK
THE NEW INDIAN EXPRESS GROUP
Support My School
JET AIRWAYS
THE JOY OF FLYING
MTS
isro

9. STUDENTS EXTRA-CURRICULAR ACTIVITIES

IIST strongly believes that education should not be restricted to the fourwalls of a class room. Academics and extracurricular activities complement each other for the all round development of student. A Student Activity Board (SAB) oversees all activities of students of IIST. Dean (Student Activities and Welfare) heads the Student Activity Board (SAB) which also consists of the Registrar, Head of all departments, Chairman of various institute committees- Sports, Technical, Cultural, Hostel and Canteen committee. Each of these committees has faculty and student representatives. The student representatives provide feedback and suggestions on all aspects concerning student issues on campus (curricular and co-curricular). The board meets once a month or as and when needs arises. SAB organize and manage the inter-collegiate cultural fest -"Dhanak", the inter-collegiate technology fest- "Conscientia", the sports day of IIST and all other activities of the students. The various students clubs of IIST also comes under SAB. Mentoring system of IIST is also manned by SAB.

9.1 Conscientia

CONSCIENTIA – 2018, the annual Tech fest was organized from March 2-5, 2018. Shri P. Kunhikrishnan, Director, Satish Dhawan Space Centre SHAR, Sriharikota was the Chief Guest of the event. Challenges in a variety of fields ranging from Physics and Astronomy to Robotics and Aerospace Engineering, Conscientia 2018 proved to

be an exhilarating experience for the participants from all around the country. Having a total footfall of 1100 in this Conscientia, students from far reaches of the country attended the event, highlighting the name and fame Conscientia has gathered over the years.

9.2 Dhanak

DHANAK- 2017was held from October 21-23, 2017 and saw several teams from the top colleges and Universities all over the country competing in the events. It had a footfall of around 901 students from outside. **Dr. Methil Devika** was the Chief Guest of the program. The pro-show by famous band Masala Coffee was the star attraction of the fest.

9.3 Sports Day

Annual Sports Day

Annual sports meet 2017-2018 was held on February 17th 2018 at LNCPE (Kariyavattom). Shri.S. Gopinath IPS [Rtd.(Formerly Inspector General of Police, Kerala and International Volleyball Player)] was the chief guest of the event. Prof. Kuruvilla Joseph (Dean Students activities) gave the welcome speech. Prof. Nirmala (HoD Chemistry) addressed the gathering. The first event was 3000 meters for boys,

followed by various other track and field events. Faculty-Staff and their kids also participated.

9.4 Model United Nations - MUN 2017

The seventh edition of Indian Institute of Space Science and Technology Model United Nations was held on April 7th& 8th, 2017. MUN is an academic simulation of the real United Nations, aimed at providing experience of diplomacy and international laws and relations. One of the major MUNs in South India and the largest in Kerala, IIST MUN conducted its first independent installment, not combined with any college fest. The event was inaugurated by Director, Dr. V K Dadhwal. The agenda discussed in

Model UNGA was "Reformulating and revamping Space Laws". A model parliament was also organized this year along with MUN 2017. The agenda discussed in the parliament was:"Steps to be taken to alleviate poverty in India". With total prize money of INR 20,000 and around 50 participants from various colleges and schools, the main event was held in four sessions spread over a span of two days.

9.5 Konchords


Konchords is the intra-collegiate cultural fest of IIST. It was conducted in the campus on September 15th, 2017 &. February 21st, 2018. Traditional and Bollywood dance performances and songs showcased the talent of IIST.

9.6 Spic Macay

SPIC MACAY is a non-political nationwide voluntary movement started by Dr. Kiren Seth, Professor of IIT Delhi. As part of IIST- SPCMACAY chapter, there was a flute concert of Shri. Shashank Subramanyam on 21st August 2017. IIST also hosted a Bihu Dance Concert by Shri. Ranjit Gagoi on 16th March 2018.


9.7 Clubs

Guided and supported by faculty members of IIST, the following clubs function in IIST

Mathematics Club

The objective of this club is to provide a platform for having open discussions on any topic in Mathematics and in connection with this; talks/lectures were arranged with a regular interval of time by Department of Mathematics.

FOSS

The FOSS Group, IIST is IIST's FOSS chapter aimed at promoting the use of Free and Open Source Software tools in the fields of core research pertaining to Aerospace, Avionics and the physical sciences. The group, germinating from the basic idea of a shared and thus free community, is aimed at promoting a complete or near-complete adoption of FOSS based platforms for all academic research and development activities going on at IIST. The group conducted software workshops and lectures to improve the overall comfort of students with FOSS software and scientific computing in general.

Aero club

AeroClub, IIST is a student endeavour in the campus that tries to instil the engineering and scientific aptitude among IISTians through its various activities. Founded back in November 2013, the club has since then organised various demonstrations, workshops, talks, sessions, seminars and competitions. The club is run by a mix of students from all batches and supported by two faculty mentors.

Last year the club has organized SpaceUp Unconference India with the IIST alumni, which acted as a bridge between IIST and the outside industry. The club is one of its kind in the sense that the senior students guide the juniors regarding certain ideas and concepts while the juniors reciprocate them in terms of excellent work, and in the process, both of them learn something new, which is quite enthusiastic. The same has been showcased in the form of AeroClub Summer Projects, which recently completed its fourth consecutive year. Workshops on topics of interest such as Hovercraft, RC Glider, and Ornithopters organised by AeroClub are usually packed with immense participation from students of all discipline and batches and the projects done by the students in these fields have been quite innovative. Club's outreach has been to various industry experts both inside ISRO and outside of it, where it has invited eminent personalities to discuss topics in its OpenHouse sessions. Few noteworthy are talks given by RLV Project Director, Shri. Shyam Mohan, Prof. K Nainan, Prof. R V Ramanan and from Airbus VP, Bangalore. The club also seeks out to merriment and fun occasionally, organising certain GoPublic events such as Kite Flying, Hot Air

Balloons where for a short period of 30-40 minutes, the crowd enjoys pleasure of flying or the sight of flight.

Many projects undertaken by members of the club and others under it have been promising in results. These projects are partially funded by the Club and thoroughly reviewed by the faculty of IIST. Few notable are QuadCopter design, 3D Printer, RC Plane and Ornithopter, Two Stage Water Rocket. These works are regularly presented in the sessions organised by the club. All the activities of AeroClub are summed up in its annual magazine, UDAAN. Till date, two editions of UDAAN have been released with third one in the process. Recently, the demonstrations of water rocket and drone flying during the institute foundation day celebrations have been appreciated by visitors. Overall, the club seeks out to keep up to the principle, 'Knowledge and happiness are best enjoyed when shared', through the efforts of many in the institute with wide participation.

Computer Club

Avionics Department's students coordinate a Computer Club for discussing computer systems related advancements. They organize training sessions, lectures, and hands-on workshops on computer systems, softwares, programming, networking, cyber security, and embedded systems. The club is currently organized by Ms. Pragya Sha, 7th Semester, B.Tech ECE (Avionics) student. Dr. B. S. Manoj is the faculty coordinator for the club. During the last one year, the club organized more than six student-driven events for the benefit of IIST students.

Robotics Club

IIST has a student driven club focusing on robotics. Avionics Department coordinates the operation with the following three faculty coordinators: Prof. Sam Zachariah, Dr. Selvaganesan, and Dr. B. S. Manoj. This club organized various student events including robotics prototype building, projects on control systems development for robotics, and unmanned aerial vehicle development. A robotics lab is also managed by the club members.

IEEE students chapter

IIST has an active IEEE Student Branch functioning, since 2011. During the last one year, the student branch has organized more than 12 student-driven events for the benefit of IIST students. Two new student branch chapters are added to the student branch during the last one year: IEEE Industrial Applications Society (IAS) student chapter and IEEE Antennas and Wave Propagation Society student chapter. Dr. B. S. Manoj mentors the student branch as its counselor.

Nano Satelite Club

The nanosatellite club is a student driven arm of the nanosatellite program at IIST. Currently, the club is involved in mission and spacecraft design for IIST's maiden home mission "IISTnSAT" and for the flagship international collaborative missions like INSPIRE and AAREST with University of Colorado, Boulder, Caltech University, and University of Surrey.

Astronomy club

The Astronomy club organized regular sessions every Friday except during quizzes. Regular activities included seminars by students (undergraduate, post-graduate as well as research scholars) and faculty, and the Astronomy quiz. Occasionally, episodes of "Cosmos: A Spacetime Odyssey", and a documentary about the expansion of the Universe were screened to the audience. The club also organized a session on observational techniques and introduced the audience on use of stargazing software such as Stellarium and Winstars2. These software were used to explain the night sky and the paths of planets, stars and other celestial objects. The club also organized a special observing session to view the total lunar eclipse on January 31 through a telescope on the roof of the Physical Sciences Block. The event was well patronized and featured a long line of attendees to view the eclipsed Moon through the telescope.

Quiz club

The Quiz Club of IIST is an informal gathering of quizzing enthusiasts which meets every Friday to hold a quizzing session. The club is one of the most regular clubs on campus. Teams of two take part in the quiz which is usually held by a volunteering member (or team). Teams from this club has represented the college in various intercollegiate events and has won several prizes. The club members are also responsible for organising quizzing events during the annual cultural and technical festivals and as part of swatch bharath program.

Photography club

This club has a moto "Photography is an art of observation. It has little to do with the things you see, and everything to do with the way you see them." – Elliot Erwitt. This club has conducted a session on the technical aspects of camera and post-processing of images (Digital Image Processing).They also organized a photography exhibition as part of Dhanak 2017.

Movie and Performing Arts Club

The Movie and Performing Arts Club of IIST is an active student club which holds its sessions approximately once every two weeks on Saturday nights. These sessions usually consist of the screening of award-winning and critically acclaimed movies. This year, the club has seen an admirable increase in the staging of skits and short plays, written by the students themselves, which has popularised a healthy culture of performing arts and stagecraft in the college.

Physics Club

Physics club organizes regular interactive sessions in which students actively engage in discussions with faculty members to get acquainted with their areas of research and aims to inculcate a culture of scientific curiosity, beyond the classroom, beyond the curriculum.

Eco club

Eco Club @ IIST, deals with activities related to campus environment, maintenance of its ecology, hygiene, and waste disposal. The activities of the club in the year 2017-18 were planting of saplings, Observance of Earth Hour, campus cleaning drives, disposal of non biodegradable waste, organic farming etc. Projects undertaken include Statistical Estimation of resources, Bio Gas Plant, classes for cleaning staff, awareness classes for the students of orphanages, frequent monitoring of garbage dump, waste segregation etc.

NIRMAAN

Nirmaan, the social outreach club of IIST took up various activities during 2017 June-December. Classes were organized for the 8th and 9thStd students of Vocational Higher Secondary School, Tholicode. Nirmaan has organized Water Rocket Session (9.09.2017), Glider and Optics Session (16.09.2017), Communication Skills and Science Session (23.09.2017). Apart from this many other voluntary activities such as visit to Sri Chithra Home, Thiruvananthapuram on 15 August, 2017 was also organized. Teacher's day was celebrated in the institute by the club. As a part of the project Dhwani(Project on recording audio books) Niirmaan also oraganised visits to the Government School for Visually Impaired, Vazhuthacaudu.

NIRMAAN also launched a successful book collection drive in the campus, which collected around 150 books that were contributed to a nearby orphanage. The enthusiastic efforts of the students resulted in a record turnover of 30 volunteers for the orphanage visit titled 'Celebrate Independence Day with New Friends'.

9.8 Sports Activities

Sports council, IIST organized different tournaments in the year 2017-18.

Inter House Tournaments

Students were divided into five houses-Akashganga, Devyani, Sharmista, Krithika and Saptarishi. Inter-house tournaments were conducted in football, cricket, basketball, badminton, chess, table-tennis, caroms and volleyball. League matches as well as knock out events were completed within the scheduled time. Certificates were distributed for winners and runners.

9.9 Extra Mural Activities

Revels Cup Championship

IIST students participated in a national level Revels cup championship on March 5th - 10th, 2018, organised by Manipal University. Cricket team won the one match against Amritha University.

Dhwani Fest

IIST students participated in Chess, Badminton, Table Tennis and Futsal in DHWANI-2018 conducted by CET Trivandrum. Badminton team entered in the quarter-final, and the chess team won the Best College in Trivandrum award. The chess team members are

1. Abhishek - First Year Engineering- Physics- 5 1/2 points
2. Unnikrishnan- Third Year Aerospace -5 points
3. Harshavardhan -First Year Aerospace - 4 points
4. Dakshin- First Year Engineering Physics- 3 Points

9.10 Field Trip

A **tribal visit** was arranged for B Tech 2nd year students for 3 days from March 9-12, 2018 to Hoganakal and Ooty. The students interacted with the tribal people of Ooty and tried to understand the primitive life and culture and the changes that is happening in the tribal life due to modernization as well as due to the climate change.

9.11 German class

In IIST, German classes were organized by the Department of Humanities for Ph.D, MTech and BTech students. The classes were taken with a MOU with Goethe Zentrum Trivandrum and an 'A' Level certificate course was provided to the students. On completion of the course, the students wrote the 'A' Level certificate exam and procured the certificate from Goethe Zentrum Institute, Trivandrum.

Audit Report

2017-2018

SAMSUTHEEN & CO.
Chartered Accountants

Ref: SC/2018-19/60 Date 03.10.2018

INDEPENDENT AUDITOR'S REPORT

We have audited the accompanying financial statements of **M/S INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY (Society), Valiamala P.O., Trivandrum – 695547** which comprise the Balance Sheet as at 31 March 2018 and the Income and Expenditure Statement for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position & financial performance of the Institute in accordance with the Accounting Standards issued by the Institute of Chartered Accountants of India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on auditing issued by the Institute of Chartered Accountants of India. Those Standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Institute's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

TC 27/997 (1) & (2), Ground Floor, Vanchiyoor Towers, Vanchiyoor P.O., Thiruvananthapuram-695035
Phone : 0471-2470499, Fax : 0471-2470189, Mob: 94471-31638 E-mail : samsutheenm@gmail.com

Basis of Qualified Opinion.

1. **Reconciliation of Fixed Assets with regard to quantity, location, cost and accumulated depreciation is not yet completed.**

2. **The balances in Sundry Creditors, Loans and advances and other personal accounts are subject to confirmation by respective parties.**

3. **No provision for gratuity, pension and leave encashment has been provided in the accounts based on Actuarial Valuation to be done in accordance with Accounting Standard -15 issued by the Institute of Chartered Accountants of India.**

Qualified Opinion

In our opinion and to the best of our information and according to the explanations given to us, subject to the above mentioned opinion, the financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India.

i) in the case of the balance sheet, of the state of affairs of the Institute as at 31st March 2018.

ii) in the case of the Income and Expenditure statement, of the **deficit** for the year ended on that date.

For SAMSUTHEEN & Co.
Chartered Accountants
Firm Regn No. 013162S dt. 1/5/2011
M. Samsutheen M.Com FCA
Proprietor
Membership No.,200384 dt 5/11/1990

Place: Thiruvananthapuram
Date: 03/10/2018.

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

BALANCE SHEET AS AT 31ST MARCH, 2018

(Amount in Rs.)

	Schedule	As at 31.03.2018	As at 31.03.2017
CORPUS/CAPITAL FUND AND LIABILITIES			
Corpus / Capital Fund	1	2,49,15,03,847	2,38,85,49,844
Reserves and Surplus		2	2
Earmarked Funds / Endowment Funds	2	4,10,25,264	1,96,94,949
Long Term Liabilities and Provisions	3	9,66,48,727	8,19,75,792
Current Liabilities and Provisions	4	17,76,22,781	24,02,19,447
TOTAL		**2,80,68,00,622**	**2,73,04,40,035**
ASSETS			
Fixed Assets	5	2,09,64,02,250	2,10,77,26,104
Long Term Assets, Loans, Advances etc	6	13,04,06,576	6,05,75,730
Current Assets, Loans, Advances etc	7	57,99,91,796	56,21,38,201
TOTAL		**2,80,68,00,622**	**2,73,04,40,035**
Significant Accounting Policies & Notes on Accounts	16		

As per our report of even date attached.

For Samsutheen & Co.
Chartered Accountants
FRN : 013162S

C.A. M. Samsutheen
(Proprietor, Mem No. 200384)

Place : Thiruvananthapuram
Date : 3rd October, 2018

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Dr. V. K. Dadhwal
Director 3-10-18

R. Hari Prasad
Finance Officer

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

	Schedule	2017-18	2016-17
INCOME			
Grants / Subsidies	8	66,00,00,000	59,50,00,000
Fees / Subscriptions	9	1,10,34,068	93,05,451
Interest Earned	10	96,63,216	84,65,827
Other Income	11	40,80,190	46,68,013
Gross Surplus/Deficit of Canteen Accounting Committee		38,53,262	47,73,098
Surplus/Deficit of Student Activities Account		-	(4,42,225)
TOTAL (A)		**68,86,30,736**	**62,17,70,164**
EXPENDITURE			
Establishment Expenses - Regular	12	26,47,12,721	23,24,22,703
Establishment Expenses - Support Services	13	16,64,63,155	12,37,06,348
Academic & Other Student Expenses	14	14,20,47,210	14,81,43,623
Other Administrative Expenses	15	10,76,65,896	10,76,52,586
Depreciation	5	20,06,93,279	19,25,88,683
TOTAL (B)		**88,15,82,261**	**80,45,13,943**
Excess of Income over Expenditure (A-B)		(19,29,51,525)	(18,27,43,779)
Less : Prior Period Items		**1,40,94,472.00**	5,32,838
Balance being Surplus/(Deficit) carried over to Corpus/Capital Fund		**(20,70,45,997)**	**(18,32,76,617)**
Significant Accounting Policies & Notes on Accounts	16		

As per our report of even date attached.

For Samsutheen & Co.
Chartered Accountants
FRN : 013162S

C.A. M. Samsutheen
(Proprietor, Mem No. 200384)

Place : Thiruvananthapuram
Date : 3rd October, 2018

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Dr. V. K. Dadhwal
Director

R. Hari Prasad
Finance Officer

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

	As at 31.03.2018	As at 31.03.2017
Schedule 1 :: CORPUS / CAPITAL FUND		
Total Grant Received - Capital and Revenue (A)		
Opening Balance of Total Grant Received	6,56,92,24,987	5,80,42,24,987
Add : Grant received during the year	97,00,00,000	76,50,00,000
	7,53,92,24,987	6,56,92,24,987
Total transfer to Revenue Grant (B)		
Opening Balance of amount transferred to Revenue Grant	2,53,46,72,442	1,93,96,72,442
Add : Transfer to Revenue Grant of 2017-18	66,00,00,000	0
Add : Transfer to Revenue Grant of 2016-17	0	59,50,00,000
	3,19,46,72,442	2,53,46,72,442
Surplus / Deficit transferred from Income & Expenditure Account (C)		
Opening Balance of net income / (expenditure)	(1,64,60,02,701)	(1,46,27,26,084)
Add/Deduct : - Current Year Surplus / (Deficit)	(20,70,45,997)	(18,32,76,617)
	(1,85,30,48,698)	(1,64,60,02,701)
Balance at the year end (A - B + C)	2,49,15,03,847	2,38,85,49,844

SANKHUTHEEN & Co. Chartered Accountants

INDIAN INSTITUTE OF SPACE SCIENCE & TECHNOLOGY * THIRUVANANTHAPURAM * Govt. of India Dept. of Space

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS	1 ISRO-GBP - ABLN & C Project	2 DST Inspire - Dr. Sakthivel	3 DST Inspire - Dr. Mahesh	4 SERB - Dr. Seena V	5 DST Inspire - Dr. Ambili K M	6 DOS-SAC- Dr. Rajesh V J	7 SERB - Dr. Roymon Joseph
a) Opening balance of the funds	7,23,170	2,54,883	8,55,998	2,11,504	5,38,530	3,05,263	3,18,341
b) Additions to the Fund							
i) Donation/Grants	0	3,24,948	0		13,74,641	2,50,000	10,00,000
ii) Income from Investment made on account of Funds	0	0	0	0	0	0	0
iii) Other additions	0	0	0	0	0	0	0
Total (a + b)	7,23,170	5,79,831	8,55,998	2,11,504	19,13,171	5,55,263	13,18,341
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	82,131	0	92,736	88,271	0	71,774
- Others	0	0	0	0	0	0	0
Sub Total	0	82,131	0	92,736	88,271	0	71,774
ii) Revenue Expenditure							
- Salaries, Wages & Allowance			5,30,200	1,65,834	10,94,757	1,34,667	6,60,000
- Rent/Consumables		53,982	2,96,631			20,638	1,03,546
- Other Administrative Expenses		47,178	2,108	3,16,500	35,377	82,790	81,735
Sub Total	0	1,01,160	8,28,939	4,82,334	11,30,134	2,38,095	8,45,281
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	0
Total (c)	0	1,83,291	8,28,939	5,75,070	12,18,405	2,38,095	9,17,055
Net Balance payable as at the year-end (a+b-c)	**7,23,170**	**3,96,540**	**27,059**	**0**	**6,94,766**	**3,17,168**	**4,01,286**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**0**	**3,63,566**	**0**	**0**	**0**

Note : Classified under Current Assets under Sch 8

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	8 AICTE - INAE - PhD - R S Mohankumar	9 NBHM-DAE-PDF- Dr. V.Govindraj	10 SERB - Dr. Jayanthi S	11 LPSC - Dr. Umesh Kadhane	12 DST - Dr. Rama Rao N	13 VSSC - Dr. Natarajan E	14 SERB - Dr. Rakesh Kumar Singh
a) Opening balance of the funds	15,000	47,392	2,64,989	2,92,830	84,88,045	1,52,110	8,51,765
b) Additions to the Fund							
i) Donation/Grants	70,000	5,46,208	0	0	17,05,500	0	3,00,000
ii) Income from Investment made on account of Funds	0	0	0	0	0	0	0
iii) Other additions (Specify Nature)	0	0	0	0	0	0	0
Total (a + b)	85,000	5,93,600	2,64,989	2,92,830	1,01,93,545	1,52,110	11,51,765
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	0	0	0	75,61,139	0	4,60,753
- Others	0	0	0	0	34,474	0	0
Sub Total	0	0	0	0	75,95,613	0	4,60,753
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	75,000	5,18,400	3,00,000	0	7,79,651	1,07,204	2,98,065
- Rent/Consumables	10,000	32,000	0	0	72,839	0	3,06,486
- Other Administrative Expenses	0	0	36,139	0	6,01,082	0	2,02,866
Sub Total	85,000	5,50,400	3,36,139	0	14,53,572	1,07,204	8,07,417
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	0
Total (c)	85,000	5,50,400	3,36,139	0	90,49,185	1,07,204	12,68,170
Net Balance payable as at the year-end (a+b-c)	**0**	**43,200**	**0**	**2,92,830**	**11,44,360**	**44,906**	**0**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**71,150**	**0**	**0**	**0**	**1,16,405**
Note : Classified under Current Assets under Sch 7							

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	15 SAC - NavIC (IRNSS) Gagan	16 UGC - DAE - Dr. Kuntala B	17 ISRO - MOM - Dr. Rajesh VJ	18 DBT - Dr. Rama Rao N	19 DOS - Dr. Rajesh V J (Spectral)	20 DOS - MOM2 - RPA - Dr. Ambili KM	21 IISU - Dr. Umesh Kadhane - Proj Assistant
a) Opening balance of the funds	4,27,000	1,62,887	6,10,000	45,03,887	5,10,000	0	
b) Additions to the Fund							
i) Donation/Grants	1,83,000	2,42,113	3,82,812	0	0	70,00,000	2,75,000
ii) Income from Investment made on account of Funds	0	0	0	1,73,146	0	0	0
iii) Other additions (Specify Nature)	0	0	0	0	0	0	0
Total (a + b)	6,10,000	4,05,000	9,92,812	46,77,033	5,10,000	70,00,000	2,75,000
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	1,48,208	0	0	6,57,375	0	22,08,513	0
- Others	0	0	12,600	12,47,438	36,500	0	0
Sub Total	1,48,208	0	12,600	19,04,813	36,500	22,08,513	0
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	2,11,409	3,00,000	3,17,857	5,67,674	3,13,036	2,55,200	85,777
- Rent/Consumables	70,560	0	0	17,816	0	0	0
- Other Administrative Expenses	48,803	0	29,171	4,68,241	14,657	3,264	2,191
Sub Total	3,30,772	3,00,000	3,47,028	10,53,731	3,27,693	2,58,464	87,968
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	0
Total (c)	4,78,980	3,00,000	3,59,628	29,58,544	3,64,193	24,66,977	87,968
Net Balance payable as at the year-end (a+b-c)	**1,31,020**	**1,05,000**	**6,33,184**	**17,18,489**	**1,45,807**	**45,33,023**	**1,87,032**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note : Classified under Current Assets under Sch 7

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	22 IISU - Perf. of Ball Bearings - Dr. Jinesh KB	23 LPSC - Dr. Umesh K - Monte Carlo Model	24 LPSC Dr. Umesh R Kadhane Stationary	25 LPSC - High Thrust EPS - Dr. Umesh K	26 DBT - Dr. Palash - 2017- Liquid Biopsy for Cancer	27 DRDO - ARMREB - Dr. K. Prabhakaran	28 DRDO - SASE - Dr. Govindankutty M
a) Opening balance of the funds	0	0	0	0	0	0	0
b) Additions to the Fund							
i) Donation/Grants	4,80,000	6,50,000	2,60,000	60,00,000	16,05,000	33,05,000	5,00,000
ii) Income from Investment made on account of Funds	0	0	0	0	0	14,823	0
iii) Other additions (Specify Nature)	0	0	0	0	0	0	0
Total (a + b)	4,80,000	6,50,000	2,60,000	60,00,000	16,05,000	33,19,823	5,00,000
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	0	0	0	0	0	2,43,544
- Others	0	0	0	0	0	0	0
Sub Total	0	0	0	0	0	0	2,43,544
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	0	1,40,000	1,41,591	0	0	0	1,38,009
- Rent/Consumables	0	0	0	0	0	36,175	3,580
- Other Administrative Expenses	3,532	0	2,255	0	0	3,28,183	4,341
Sub Total	3,532	1,40,000	1,43,846	0	0	3,64,358	1,45,930
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	0
Total (c)	3,532	1,40,000	1,43,846	0	0	3,64,358	3,89,474
Net Balance payable as at the year-end (a+b-c)	**4,76,468**	**5,10,000**	**1,16,154**	**60,00,000**	**16,05,000**	**29,55,465**	**1,10,526**
Net Balance receivable as at the year-end (c-a-b) *Note : Classified under Current Assets under Sch 7*	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	29 Mangrove Cell - Dr. Gnanappazham - 2018	30 Max-Planck - Dr. Jagadheep - 2017	31 MeitY SAMEER - Dr. Priyadarshnam	32 SERB - Dr. Resmi L - 2017 - Gamma Rays	33 SERB - Dr. Seena V - Nanomechanical Sensor	34 AICTE - INAE - Aswathy RV - 2017	35 ICSSR - PDF - Dr. Sandhya R. S. - 2017
a) Opening balance of the funds	0	0	0	0	0	0	0
b) Additions to the Fund							
i) Donation/Grants	51,09,000	20,34,560	42,88,000	9,51,818	45,80,000	1,35,000	4,18,645
ii) Income from Investment made on account of Funds	0	0	0	0	0	0	0
iii) Other additions (Specify Nature)	0	0	0	0	0	0	0
Total (a + b)	51,09,000	20,34,560	42,88,000	9,51,818	45,80,000	1,35,000	4,18,645
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	0	0	0	0	0	0
- Others	0	0	0	0	0	0	0
Sub Total	0	0	0	0	0	0	0
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	0	51,226	0	37,097	53,226	1,10,323	4,18,645
- Rent/Consumables	0	0	0	0	0	0	0
- Other Administrative Expenses	0	0	27,540	4,341	0	0	0
Sub Total	0	51,226	27,540	41,438	53,226	1,10,323	4,18,645
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	0
Total (c)	0	51,226	27,540	41,438	53,226	1,10,323	4,18,645
Net Balance payable as at the year-end (a+b-c)	**51,09,000**	**19,83,334**	**42,60,460**	**9,10,380**	**45,26,774**	**24,677**	**0**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Note : Classified under Current Assets under Sch 7							

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	36 SERB - PDF - Dr. Ishwar Kumar C - 2017	37 SERB - PDF - Dr. Krishnaswamy R - 2017	38 SERB - PDF - Dr. Linsha Vazhayal - 2017	39 SERB - PDF - Dr. Priyanka B - 2017	40 SERB - INTOPMAA-17 - Dr. CS Narayanamurt	41 TIFR - Astronomy Olympiad Nurture Camp	42 SERB - Travel - Dr. Govindan Kutty
a) Opening balance of the funds	0	0	0	0	0	0	10,827
b) Additions to the Fund							
i) Donation/Grants	6,00,000	9,60,000	8,77,548	9,60,000	2,00,000	1,64,580	0
ii) Income from Investment made on account of Funds	0	0	0	0	0	0	0
iii) Other additions (Specify Nature)	0	0	0	0	0	0	0
Total (a + b)	6,00,000	9,60,000	8,77,548	9,60,000	2,00,000	1,64,580	10,827
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	55,115	0	86,597	0	0	0
- Others	0	0	0	0	0	0	0
Sub Total	0	55,115	0	86,597	0	0	0
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	2,50,162	4,87,667	5,11,548	5,44,677	0	0	0
- Rent/Consumables	0	57,554	85,059	0	0	9,660	0
- Other Administrative Expenses	96,851	1,12,435	1,11,697	1,00,000	2,03,924	1,54,920	0
Sub Total	3,47,013	6,57,656	7,08,304	6,44,677	2,03,924	1,64,580	0
iii) Fund Returned to the Funding Agency	0	0	0	0	0	0	10,827
Total (c)	3,47,013	7,12,771	7,08,304	7,31,274	2,03,924	1,64,580	10,827
Net Balance payable as at the year-end (a+b-c)	**2,52,987**	**2,47,229**	**1,69,244**	**2,28,726**	**0**	**0**	**0**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**0**	**0**	**3,924**	**0**	**0**

Note : Classified under Current Assets under Sch 7

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

Schedule 2 :: EARMARKED/ENDOWMENT FUNDS (contd.)	43	44	45	46	47	TOTAL	
	DST - PAMC - Meeting	SERB - Travel - Vinu RV	SERB - Travel- Dr. Gomathi	SERB - Travel- Najeeb P K	SERB - Travel- Veena V S	2017-18	2016-17
a) Opening balance of the funds	1,50,528	(3,860)	0	0	0	1,96,91,089	23,16,071
b) Additions to the Fund							
i) Donation/Grants	0	0	1,66,596	1,63,063	67,556	4,81,30,588	3,37,53,028
ii) Income from Investment made on account of Funds	0	0	0	0	0	1,87,969	7,964
iii) Other additions (Specify Nature)	0	3,860	0	0	0	3,860	0
Total (a + b)	1,50,528	0	1,66,596	1,63,063	67,556	6,80,13,506	3,60,77,063
c) Utilisation/Expenditure towards objective of funds							
i) Capital Expenditure							
- Fixed Assets	0	0	0	0	0	1,17,56,156	51,68,179
- Others	0	0	0	0	0	13,31,012	0
Sub Total	0	0	0	0	0	1,30,87,168	51,68,179
ii) Revenue Expenditure							
- Salaries, Wages & Allowance	0	0	0	0	0	95,98,902	53,17,796
- Rent/Consumables	0	0	0	0	0	11,76,526	6,39,204
- Other Administrative Expenses			1,66,596	1,63,063	67,556	35,19,336	46,28,779
Sub Total	0	0	1,66,596	1,63,063	67,556	1,42,94,764	1,05,85,779
iii) Fund Returned to the Funding Agency	1,50,528	0	0	0	0	1,61,355	6,32,016
Total (c)	1,50,528	0	1,66,596	1,63,063	67,556	2,75,43,287	1,63,85,974
Net Balance payable as at the year-end (a+b-c)	**0**	**0**	**0**	**0**	**0**	**4,10,25,264**	**1,96,94,949**
Net Balance receivable as at the year-end (c-a-b)	**0**	**0**	**0**	**0**	**0**	**5,55,045**	**3,860**

Note : Classified under Current Assets under Sch 7

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

	As at 31.03.2018	As at 31.03.2017
Schedule 3 :: LONG TERM LIABILITIES AND PROVISIONS		
a) Employee Provident Funds and Retirement Benefits		
- General Provident Fund	3,28,84,151	2,78,31,204
- Contributory Provident Fund	54,24,580	43,01,082
- New Pension Scheme	42,176	16,868
- Other Retirement Benefits	5,02,72,614	4,16,33,638
Sub Total (a)	**8,86,23,521**	**7,37,82,792**
b) Caution Deposit		
- Caution Deposit from Students	80,25,206	81,93,000
Sub Total (b)	**80,25,206**	**81,93,000**
TOTAL	**9,66,48,727**	**8,19,75,792**
Schedule 4 :: CURRENT LIABILITIES AND PROVISIONS		
a) Current Liabilities		
1. Sundry Creditors		
- For Goods		
Capital Goods	1,31,83,243	1,72,83,957
Revenue Expenditure	-	24,754
- For Services	2,51,22,665	1,79,44,965
2. Statutory Liabilities		
- Overdue	-	-
- Others	27,65,672	80,42,196
3. Other Current Liabilities		
- Interest refundable to DOS (received)	3,90,95,993	1,72,72,060
- Interest refundable to DOS (accrued)	23,43,587	1,13,36,879
- B.Tech Fees refundable to DOS	8,38,14,184	15,72,72,573
- Others	1,12,97,437	1,10,42,063
Sub Total (a)	**17,76,22,781**	**24,02,19,447**
TOTAL	**17,76,22,781**	**24,02,19,447**

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
THIRUVANANTHAPURAM

SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

(Amount in Rs.)

Schedule 5 :: FIXED ASSETS

Particulars	Gross Block (at cost) as at 01.4.2017	Additions		Transfer to Installed from Uninstalled	Deletions	Gross Block (at cost) as at 31.03.2018	Rate of Depreciation	Depreciation				Net Block as at 31.3.2018	Net Block as at 31.3.2017
		Installed	Under Installation					As at 01.04.2018	For the year	Prior Period	As at 31.3.2018		
Land	3,32,52,002	0	0	0	0	3,32,52,002	0.00%	0	0	0	0	3,32,52,002	3,32,52,002
Building	1,30,25,45,955	56,15,02,871	0	0	0	1,86,40,48,826	10.00%	55,89,52,864	9,34,39,020	97,52,564	66,21,44,448	1,20,19,04,378	74,35,93,091
Plant & Machinery	84,90,46,868	7,43,44,683	0	0	0	92,33,91,551	15.00%	41,43,89,096	7,63,50,368	0	49,07,39,464	43,26,52,087	43,46,57,772
Furniture & Fittings	15,19,78,904	1,25,01,479	0	0	0	16,44,80,383	10.00%	7,45,78,076	89,90,231	0	8,35,68,307	8,09,12,076	7,74,00,828
Ambulance	8,80,644	0	0	0	0	8,80,644	15.00%	4,89,898	58,612	0	5,48,510	3,32,134	3,90,746
Motor Cars & Bikes	1,12,62,430	41,44,171	0	0	0	1,54,06,601	15.00%	79,96,128	11,11,571	0	91,07,699	62,98,902	32,66,302
Motor Buses & Truck	69,48,520	38,21,511	0	0	0	1,07,70,031	15.00%	43,36,715	9,64,997	0	53,01,712	54,68,319	26,11,805
Computers	8,66,79,625	1,34,72,154	0	0	0	10,01,51,779	40.00%	8,51,21,487	60,12,117	0	9,11,33,604	90,18,175	15,58,138
Software	7,42,32,488	42,39,474	0	0	0	7,84,71,962	40.00%	6,47,81,838	57,59,926	0	7,05,41,764	79,30,198	94,50,650
Library Books	5,18,11,906	54,82,117	0	0	695	5,72,93,328	60.00%	5,03,72,938	41,52,234	0	5,45,25,172	27,68,156	14,38,968
Campus networking	4,15,51,525	17,11,857	0	0	0	4,32,63,382	40.00%	3,65,78,390	26,73,997	0	3,92,52,387	40,10,995	49,73,135
Canteen Equipments	1,84,33,880	4,85,225	0	0	0	1,89,19,105	15.00%	1,10,51,063	11,80,206	0	1,22,31,269	66,87,836	73,82,817
Soft Furnishing	10,43,023	0	0	0	0	10,43,023	100.00%	10,43,023	0	0	10,43,023	0	0
Uninstalled Assets													
Plant & Machinery	5,43,75,739	0	8,82,665	14,37,868	0	5,38,20,536	0.00%	0	0	0	0	5,38,20,536	5,43,75,739
Furniture & Fittings	2,90,064	0	3,42,837	2,90,064	0	3,42,837	0.00%	0	0	0	0	3,42,837	2,90,064
TOTAL	**2,68,43,33,573**	**68,17,05,542**	**12,25,502**	**17,27,932**	**695**	**3,36,55,35,990**		**1,30,96,91,516**	**20,06,93,279**	**97,52,564**	**1,52,01,37,359**	**1,84,53,98,631**	**1,37,46,42,057**
Previous Year	**2,54,98,96,557**	**12,59,99,014**	**5,40,45,323**	**4,56,07,321**	**0**	**2,68,43,33,573**		**1,11,71,02,833**	**19,25,88,683**	**0**	**1,30,96,91,516**	**1,37,46,42,057**	**1,43,27,93,724**
Capital Work in progress	**73,30,84,047**	**0**	**10,28,96,856**	**58,49,77,284**	**0**	**25,10,03,619**		**0**	**0**	**0**	**0**	**25,10,03,619**	**73,30,84,047**
TOTAL												**2,09,64,02,250**	**2,10,77,26,104**

S.A.MSUTHEEN & CO. Chartered Accountants

INDIAN INSTITUTE OF SPACE SCIENCE & TECHNOLOGY * THIRUVANANTHAPURAM * Govt. of India Dept. of Space

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES TO BALANCE SHEET AS AT 31ST MARCH, 2018

	As at 31.03.2018	As at 31.03.2017
Schedule 6 :: LONG TERM ASSETS, LOANS, ADVANCES ETC		
a) Loans		
- Staff	12,67,357	15,90,381
b) Advances and other amounts on capital account recoverable in cash or in kind or for value to be received		
- Mobilisation Advance to SPCL	-	-
- Interim Advance to SPCL	12,43,00,000	5,43,00,000
c) Security Deposits	48,39,219	46,85,349
TOTAL	**13,04,06,576**	**6,05,75,730**
Schedule 7 :: CURRENT ASSETS, LOANS, ADVANCES ETC		
a) Current Assets		
1. Inventories		
- Canteen inventories	783116	6,13,789
2. Sundry Debtors		
- Debtors outstanding for a period exceeding six months		-
- Others		-
3. Cash Balances in hand (including cheques/drafts and imprest)	54,361	19,805
4. Bank Balances		
a) With Scheduled Banks		
- On Current Accounts	7,32,126	21,89,28,930
- On Deposit Accounts	41,05,78,010	20,50,01,352
- On Earmarked & Retirement Benefits Accounts	13,01,48,814	9,46,74,482
Sub Total (a)	**54,22,96,428**	**51,92,38,358**
b) Loans, Advances and Other Assets		
1. Advances and other amounts recoverable in cash or in kind or for value to be received		
- On Capital Account	8,60,405	58,68,446
- Prepayments	1,36,97,731	1,45,58,583
- Others	83,01,695	67,52,357
2. Income Accrued		
- On Bank Deposits	1,46,71,991	1,55,40,650
- On Other Deposits	1,63,546	1,79,807
Sub Total (b)	**3,76,95,368**	**4,28,99,843**
TOTAL (a+b)	**57,99,91,796**	**56,21,38,201**

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

	2017-18	2016-17
Schedule 8 :: GRANTS / SUBSIDIES		
(irrevocable Grants & Subsidies Recovered)		
1. Central Government	66,00,00,000	59,50,00,000
TOTAL	**66,00,00,000**	**59,50,00,000**
Schedule 9 :: FEES / SUBSCRIPTIONS		
1. Entrance Fees	48,91,125	33,68,600
2. Annual Fees/Subscriptions	61,42,943	59,36,851
TOTAL	**1,10,34,068**	**93,05,451**
Schedule 10 :: INTEREST EARNED		
1. On Term Deposit		
a) With Scheduled Banks	96,47,528	83,47,408
b) Others	0	0
2. On Loans / Advances		
a) Employee/Staff	15,688	1,18,419
TOTAL	**96,63,216**	**84,65,827**
Schedule 11 :: OTHER INCOME		
1. Rent Receipts	7,88,642	9,63,058
2. Sale of Tender Forms	24,781	63,661
3. Sale of Scrap / Vehicles / Trees	7,18,328	54,454
4. Miscellaneous Income	25,48,439	35,86,840
TOTAL	**40,80,190**	**46,68,013**
Schedule 12 :: ESTABLISHMENT EXPENSES - REGULAR		
1. Salaries & Allowances	24,66,16,595	21,20,76,636
2. Contribution to NPS	1,33,26,830	1,15,97,434
3. Contribution to CPF	2,62,591	2,69,084
4. Medical Expense- Staff	20,49,555	34,66,327
5. Expense on Employees Retirement & Terminal Benefits	24,38,400	49,12,242
6. Interest on PF Contribution	0	19,480
7. Staff Training Expense	18,750	81,500
TOTAL	**26,47,12,721**	**23,24,22,703**

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SCHEDULES FORMING PART OF INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

	2017-18	2016-17
Schedule 13 :: ESTABLISHMENT EXPENSES - SUPPORT SERVICES		
1. Consultancy & Manpower Charges	8,45,90,744	7,76,00,914
2. Remuneration to Contract Employees	1,05,16,460	1,81,26,879
3. CISF Expenses	7,13,55,951	2,79,78,555
TOTAL	**16,64,63,155**	**12,37,06,348**
Schedule 14 :: ACADEMIC & OTHER STUDENT EXPENSES		
1. Admission Expense	56,53,660	98,60,450
2. Assistanceship to Students	3,97,50,459	4,14,98,567
3. Library Services	3,04,31,008	2,69,00,741
4. Academic Expense	5,41,81,848	5,86,07,665
5. Supplies & Materials	1,04,75,305	94,01,200
6. Student Activities Expense	15,54,930	18,75,000
TOTAL	**14,20,47,210**	**14,81,43,623**
Schedule 15 :: OTHER ADMINISTRATIVE EXPENSES		
1. Maintenance & Upkeep		
Repairs & Maintenance - CMD	2,03,79,649	2,03,44,993
Repairs & Maintenance	95,76,513	95,04,008
House Keeping Expense	6,83,340	8,86,456
Sub Total (a)	**3,06,39,502**	**3,07,35,457**
2. Professional Charges		
Audit Fees	1,47,500	1,38,000
Legal Expense	2,75,987	59,600
Sub Total (b)	**4,23,487**	**1,97,600**
3. Administrative Expenses - Others		
Vehicle Operating Expense	2,00,81,280	2,29,04,351
Electricity & Water Charges	2,56,48,820	2,34,98,134
Travelling Expense	64,36,808	59,32,206
Research & Development Expense	91,73,628	78,20,054
Printing & Stationery	38,51,996	33,65,560
Advertisement & Publicity	4,46,986	7,97,251
Hospitality Expense	38,96,262	42,44,358
Telephone & Internet Expense	22,84,982	23,87,533
Office Expense	27,02,838	24,19,779
Recruitment Expense	18,63,937	32,16,481
CEP & IPR Expenses	2,13,725	1,16,975
Bank Charges	1,645	16,847
Sub Total (c)	**7,66,02,907**	**7,67,19,529**
TOTAL	**10,76,65,896**	**10,76,52,586**

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018

A. Significant Accounting Policies

1. Basis of Accounting
   The financial statements have been prepared in accordance with the Generally Accepted Accounting Principles in India (Indian GAAP) and are prepared on accrual basis under the historical cost convention. The accounting policies adopted in the preparation of the financial statements are consistent with those followed in the previous year.

2. Use of estimates
   The preparation of the financial statements in conformity with Indian GAAP requires the Management to make estimates and assumptions considered in the reported amounts of assets and liabilities (including contingent liabilities) and the reported income and expenses during the year. The Management believes that the estimates used in preparation of the financial statements are prudent and reasonable. Future results could differ due to these estimates and the differences between the actual results and the estimates are recognized in the periods in which the results are known / materialize.

3. Inventories
   The inventories represents canteen inventories and is valued at lower of cost or net realizable value as certified by the Canteen Manager.

4. Depreciation
   a. Depreciation has been provided on the written down value method as per the rates prescribed in the Income Tax Act, 1961.
   b. Depreciation on assets acquired in a particular year is provided for the whole year irrespective of date of addition.
   c. Depreciation has not been charged on capital work in progress and on those assets under installation as on 31.03.2018.
   d. Software not having perpetual licenses are written off over the license period.

5. Revenue Recognition
   a. Grant in aid received from the Department of Space, is accounted on accrual basis. Out of the total grant received, the amount received towards revenue expenditure is treated as Revenue Grant / income over the period necessary to match them with the costs for which they are intended to compensate, on a systematic basis. The remaining grant forms part of the Corpus Fund along with other grant received.
   b. Tuition fees, fines and other recoveries from underperforming students (as per the policy of the institute) are accounted on cash basis. As per Department of Space instructions, Fees received from B.Tech students (performing and non-performing students) is not recognized as income and is shown as a liability payable to Department to Space after adjusting related costs.
   c. Interest income is accounted on accrual basis. Interest on deposits created out of grant received is not recognized as income and is shown as a liability payable to Department to Space.

6. Fixed Assets
   a. Land – (i) The present activity of the Institute is in the Valiamala campus which has been handed over by LPSC vide letter no. VSSC/CMG/2010 dated 05.08.2010 and has been measured at 53.43 acres. No value has been separately provided in the books for this land. (ii) 20 acres of Land in Survey No. 4003 in Thennoor Village has been assigned and handed over to ISRO authorities on 31.12.2007 as per letter No. B8-85534/07 dated

Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018 (contd)

01.01.2008 of District Collector, Trivandrum subject to the condition that facilities stated by ISRO in their letter no. ISST-DIR-2007 dt 06.12.2007 should be set up in the property within 18 months. The said land should be used only for scientific and educational purposes. No value has been mentioned in the Land Assignment Order and hence the value of the property is taken at Re. 1/- for each property.

b. Building – Construction of buildings is still in progress. Buildings, the construction of which are more than 90% complete, certified by the Construction and Maintenance Division and which have been put into use have been transferred from Capital Work-in-Progress to Buildings based on actual payments made.
c. Plant and Machinery – It mainly constitutes Laboratory Equipment, Office Equipment, Electricals & Electronics and other Machinery.
d. Buildings and other Fixed Assets are carried at cost less accumulated depreciation. Cost comprises the purchase price or acquisition cost, installation charges and any attributable cost of bringing the assets to working condition for its intended use. Exchange differences arising on restatement / settlement of foreign currency payables relating to acquisition of depreciable fixed assets are adjusted to the cost of the respective assets and depreciated over the remaining useful life of such assets.
e. Capital Work-in-Progress pertains to construction in progress at Valiamala.
f. Assets that have been delivered to IIST up to 31.03.2018 have been recognized as assets but depreciation has not been charged on Assets under installation.

7. Foreign currency transactions
Foreign currency monetary items outstanding at the Balance Sheet date are restated at the year-end rates. Non-monetary items are carried at historical cost. The exchange differences arising on restatement / settlement of long-term foreign currency monetary items are capitalised as part of the depreciable fixed assets to which the monetary item relates and depreciated over the remaining useful life of such assets.

8. Earmarked / Endowment Funds
Earmarked / Endowment Funds mainly include external agency funding received for research & development purpose and conduct of seminars & workshops. Value of assets procured out of such funds for the purpose specified have gone to reduce the value of Fund in hand and have not been treated as an asset of the Institute as the ownership of the same vests with the funding agency. Earmarked / Endowment Funds are held in a separate Current Account linked to Term Deposits. The interest received in the account has been taken as the Institutes Income. Interest claims in the future, if any, from the disbursing parties of such Earmarked / Endowment Funds will be met at the time of the claim based on the deposit rates prevailing during the period of holding of the particular Fund.

9. Employee Benefits
Employee benefits include General Provident Fund (GPF), Contributory Provident Fund (CPF), New Pension Scheme (NPS), and Group Insurance Scheme (GIS). The Institute's contribution to CPF and NPS are considered as defined contribution plans and are charged as an expense as they fall due based on the amount of contribution required to be made.
GPF and CPF funds are maintained separately by the Institute in Savings Bank Account and linked Flexi deposits. Annual Interest provision on GPF and CPF balance is made from Interest earned during the year from investment of such funds in flexi deposits. Interest earned over and above the provision made is transferred to an Interest Fluctuation Reserve and in the event of a shortfall in interest earned, the difference is met from such Reserve, and any balance shortfall after adjustment with Reserve is met by IIST.
Retirement Benefits consisting of pension fund, gratuity and leave encashment received from previous employers of employees joining from other Government organizations have been maintained separately in a Current Account and linked Term Deposits.

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018 (contd)

10. Taxes on income
    Being a non-profit institution existing solely for education purposes and being wholly financed by the Government of India, the income of the Institute is exempt under section 10[(23C)][iiiab] of the Income Tax Act, 1961.

11. Research and Development Expenses
    Revenue expenditure pertaining to research is charged to the Income and Expenditure Account. Fixed assets utilized for research and development are capitalized and depreciated in accordance with the policies stated for Fixed Assets.

12. Provisions and Contingencies
    A provision is recognised when the Institute has a present obligation as a result of past events and it is probable that an outflow of resources will be required to settle the obligation in respect of which a reliable estimate can be made. Provisions (excluding retirement benefits) are not discounted to their present value and are determined based on the best estimate required to settle the obligation at the Balance Sheet date. These are reviewed at each Balance Sheet date and adjusted to reflect the current best estimates.

B. <u>Notes to the Accounts</u>

1. Depreciation
   Assets are depreciated at written down value method as per rates prescribed in the Income Tax Act, 1961 as recommended by the Office of the Principal Director of Audit, Scientific Departments, Bangalore. Software not having perpetual licenses are written off over the license period

2. Revenue
   a. Out of Grant of Rs. 97,00,00,000/- received during 2017-18, Rs. 66,00,00,000/- received specifically towards revenue expenditure has been transferred to Revenue Grant.
   b. Interest earned (actually received) on funds from grant-in-aid maintained in deposits is refundable to DOS. Interest of Rs. 2,18,23,933/- (excluding the interest received on the Provident Fund Accounts and Earmarked Funds) has been actually received during 2017-18 and the same has been shown as refundable to DOS.
   c. Department of Space has, vide Letter No. B. 12011/7/2015-Sec.2 dated 21.10.2015, instructed that "Fees paid back by students on receipt of Assistanceship package and receipts from non-performing students" are to be remitted back to Government Account. During 2017-18, an amount of Rs. 4,04,37,536/- has been shown as refundable to DOS after adjusting related costs.
   d. Canteen Accounting Committee accounts is maintained separately and the gross deficit / surplus, which is exclusive of administrative cost, is recognised in the Income and Expenditure Account.
   e. Student Activities Account is maintained separately and the deficit / surplus is recognised in the Income and Expenditure Account. From 2017-18, students are managing this Account on their own and hence the same has been taken out of IIST books of accounts.

3. Fixed Assets
   Land – There is a stay by the Honorable High Court of Kerala on carrying out construction activities on a part of land (approximately 80 acres) purchased at Ponmudi in Trivandrum District for setting up the Institute. Over and above this 80 acres, approximately 20 acres

Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018 (contd)

of land at Ponmudi and 44.18928 acres at Valiamala has been transferred by the Government of Kerala free of cost in December 2007 and April 2009 respectively.These two properties have been brought into the books of accounts in 2013-14 by assigning a nominal value of Re. 1/- each. The present activity of the Institute is in the Valiamala campus which has been handed over by LPSC vide letter no. VSSC/CMG/2010 dated 05.08.2010, and has been measured at 53.43 acres. No separate lease agreement / transfer of ownership of land was obtained by IIST. No value has been separately provided in the books for this land. An amount of Rs. 1,97,022/- was incurred in 2017-18 towards decreetal compensation pertaining to this land. The same has been classified under Loans, Advances and Other Assets and not under Fixed Assets as the ownership of the property still vests with LPSC, Valiamala

a. Capital Work-in-Progress includes a sum of Rs. 4,29,18,417 /- towards project management and consultancy charges and service tax of Rs. 7,18,04,446/-, both pending for appropriation to fixed assets on final completion of all buildings.
b. An amount of Rs. 5,35,64,588/- pertaining to assets that have been delivered to IIST before 31.03.2018 but under installation as on 31.03.2018 have been accounted as fixed assets & depreciation has not been charged on the same.

4. Employee Benefits
   a. Employer and Employee contribution to New Pension Scheme is being transferred to NSDL.
   b. The Institute has entered into a Group Insurance Scheme (GIS) agreement with Life Insurance Corporation of India from 2011-12 onwards.
   c. Provision for interest on PF Contribution, at the rates prescribed, have been made and the corresponding expenditure has been adjusted against Interest earned on GPF and CPF funds parked in Savings Accounts (linked to flexi deposits) and the balance interest earned has been retained as Interest Fluctuation Reserve. Provision for liability in respect of gratuity, pension and leave encashment has not been made. Permission from DOS for creation & maintenance of a separate pension fund has been received during 2013-14. The actuarial valuation amount will be brought into the books of accounts on obtaining necessary approval for the same from the Board of Management. In addition, the retirement benefits from the previous employers for the members governed under the GPF have not been received in all cases.

5. Prior Period Item
   Details of prior period items are as given below :-

Details	Prior period expenses
Hostel fee reversed – Mtech	4,500.00
Repairs & Maintenance	9,26,853.00
E-Journal Subscription	34,58,233.00
Depreciation	97,52,564.00
Total (A)	**1,41,42,150.00**

Details	Prior period income
Rental Income	18,372.00
Research Project Expenditure reversed	9,826.00
Interest on GPF	19,480.00
Total (B)	**47,678.00**

Net prior period expense (A-B) = Rs. 1,40,94,472.00

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Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018 (contd)

6. Academic Expenses
   Academic Expenses mainly include expenses towards Lectures for students, Project & Internship expenses, stipend / fellowship paid to PhD and M.Tech students and expenses incurred on Seminars, Symposia and Conferences.

7. Admission Expenses
   Admission expenses include expenses incurred towards B.Tech, M.Tech and PhD admissions

8. Assistanceship to Students
   As per the approval of The Chairman, Board of Management-IIST / Secretary, DOS vide Letter No. PP & PM : IIST : 09-10 dated July 17th, 2009, the B. Tech students of the Institute are entitled for an assistanceship of Rs. 49,000/- [increased to Rs. 51,400/- from Even semester 2014-15] for each semester towards Statutory Semester Fee, Student Amenity Fee, Hostel & Dining, Establishment charges and Medical cover. The assistanceship amount of Rs. 48,400/- (exclusive of book grant) for a semester is disbursed to eligible students based on the performance of the previous semester. The assistanceship amount disbursed is then remitted back by the students to the Institute and expenditure corresponding to the assistanceship so received (under Hostel, Dining & Medical cover) is set off against the assistanceship amount. During 2017-18, an amount of Rs. 3,86,23,200/- was disbursed as assistanceship..

9. Supplies and Materials
   Supplies and Materials mostly consist of lab consumables.

10. Salary
    Salary cost for the month of March 2018 has not been taken into the books of accounts for 2017-18 as March salary for a particular year for central government employees is released in April of that year only. Expenditure for March 2017 to February 2018 has been shown in 2017-18.

11. CISF Expenses
    CISF expenditure for 2017-18 was Rs. 7.14 crores. Since CISF started operations in IIST on 18.10.2016, expenses for 2016-17 was only 2.79 crores.

12. Bank balances
    The negative balance in the UBI Current Account represents the cheques issued on the closing date of the financial year which are not presented for payment. The Institute has sufficient balance to cover these cheques issued in the flexi deposits maintained with UBI. Hence, the negative balance does not represent any Overdraft.

13. Earmarked / Endowment Funds
    a. An amount of Rs. 29.28 lakhs pertaining to expenditure for Externally Funded projects has been met from IIST bank accounts and is to be transferred from the balance in Earmarked Funds bank accounts to IIST's main bank account.
    b. As on 31.03.2018, assets amounting to Rs. 2.83 crores have been purchased from externally funded projects. The same has not been included in the Balance Sheet of the Institute as the ownership of the same vests with the sponsor.

14. Format of accounts
    The accounts of the Institute are prepared as per proforma suggested by the Office of the Principal Director of Audit, Scientific Departments, Bangalore.

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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Schedule 16 :: SIGNIFICANT ACCOUNTING POLICIES AND NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 2018 (contd)

14. Insurance
The Institute being an autonomous body under the Department of Space (DOS), it is governed by the rules and regulations as applicable to DOS. As per the "Book of Financial Powers" prescribed by DOS "No Government property whether movable or immovable shall be insured. No liability shall be incurred in connection with the insurance of such property without the prior approval of the Department of Space in consultation with the Member for Finance." The matter was taken up for consultation with the Department of Space during 2012-13 and it was decided in the Seventh Finance Committee meeting of IIST dated 3rd June, 2014 not to insure the assets of the institute.

15. Inoperative Balances
An amount of Rs. 6.63 lakhs relates to balances that have been outstanding from 01.04.2017.

16. Balances in personal accounts
Balances in personal accounts are subject to confirmation from respective parties.

17. Contingent Liabilities
    a. The unexecuted portion of the contracts entered into by the Institute will form part of the current liability of the Institute. However, the same could not be quantified.
    b. Interest earned on Earmarked / Endowment Funds held in a separate Current Account linked to Term Deposits has been taken as the Institutes Income. Interest claims in the future, if any, from the disbursing parties of such Earmarked / Endowment Funds will be met at the time of the claim based on the deposit rates prevailing during the period of holding of the particular Fund
    c. In the case of buildings / structures completed by SPCL, only 90% has been billed by SPCL and subsequently paid by IIST. The balance 10% (approximately Rs. 17.73 crores) has not been billed and the same will be paid only on completion of the project. In case of all other works completed by SPCL and not billed as on 31.03.2018 provision has not been made in the books of accounts since the same is not quantifiable.

18. Building Construction:
The institute entered into a contract with SPCL, Mumbai on 27.08.2008 for Rs. 278.60 crores with a completion period of 18 months for setting up building and infrastructure at its campus in Valiamala on turnkey basis. As per the note provided by the CMD office the project was delayed due to various unforeseen reasons and the extension of the contract was given up to 20.02.2019 without prejudice to the right of the institute to impose the levy of compensation for the delay. As per clause 2 of the agreement the institute can levy penalty on the works which will have an impact on the accounts. The same could not be quantified due to want of details. As on 31.03.2018, advance amount paid to SPCL towards interim advance amounts to Rs. 12.43 crores. The Institute currently holds the following instruments as security with respect to the contract with SPCL.

Nature of security	Amount (in crores)
Security Deposit – Bank guarantee	12.14
Performance Bank guarantee	12.14
Bank guarantee against Interim Advance	12.43

As per SPCL's confirmation, balance payable to SPCL as on 31.03.2018 is Rs. 1.17 crores(subject to reconciliation) and Advances received by SPCL as on 31.03.2018 is Rs. 12.43 crores.

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19. Figures for the previous year
    Figures for the previous year have been regrouped and/or reclassified wherever considered necessary.

As per our report of even date attached

For Samsutheen & Co.
Chartered Accountants
FRN : 013162S

C.A. M. Samsutheen
(Proprietor, Mem No. 200384)

Place : Thiruvananthapuram
Date : 3rd October, 2018

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Dr. V. K. Dadhwal
Director 3-10-18

R. Hari Prasad
Finance Officer

INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY
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RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

Receipts	2017-18	2016-17	Payments	2017-18	2016-17
I. Opening Balance			**I. Expenses**		
a.Cash and DD's in hand	19,805	5,048	**a.Establishment Expenses - Regular**		
b.Bank Balances			Salaries & Allowances (admin & faculty)	24,68,10,146	21,19,56,005
In current accounts	21,89,28,930	1,36,59,566	Contribution to NPS	1,33,26,830	1,15,97,434
In deposit accounts	20,50,01,352	47,73,44,706	Contribution to CPF	2,62,591	2,69,084
In earmarked/retirement benefits accounts	9,46,74,482	5,82,52,821	Medical Expense- Staff	20,05,016	31,86,073
			Employees Retirement Benefits	24,38,400	49,12,242
II.Grants Received			Interest on PF Contribution	(19,480)	19,480
a.From Government of India	97,00,00,000	76,50,00,000	Staff Training Expenses	18,750	81,500
III. Interest Received			**b.Establishment Expenses - Support Services**		
a.On Bank Deposits	14,43,822	83,35,621	Consultancy & Manpower Charges	8,25,38,372	7,88,15,341
b.On Other Deposits	0	0	Remuneration to Contract Employees	1,05,16,460	1,81,26,879
c.Loans, Advances etc.	15,688	1,18,419	CISF Expenses	7,02,63,267	2,35,73,123
IV. Other Income			**c. Academic & Other Student Expenses**		
a.Entrance Fees	48,91,125	33,68,600	Admission Expense	57,08,580	98,04,210
b.Annual Fees/Subscriptions	67,89,668	56,68,937	Assistanceship to Students	3,98,97,623	4,14,09,980
c.Other Income	43,18,135	44,99,855	Library Services	2,87,57,943	2,75,04,030
			Academic Expense	5,36,06,629	5,84,51,739
V. Any other receipts			Supplies & Materials	1,04,23,542	1,05,47,099
a. Refund from Branches	1,16,070	0	Student Activities Expense	16,17,533	18,32,699
b.Security Deposits received	10,55,743	23,55,053			
c.Earnest Money Deposits received	46,46,139	41,57,606	**d. Other Administrative Expenses**		
d.Performance Guarantee	3,58,940	7,32,288	Repairs & Maintenance	1,03,51,639	1,04,28,036
e.Advance for Research & Seminars	4,83,22,417	3,37,60,992	Repairs & Maintenance - CMD	2,11,82,457	1,99,86,590
f. B.Tech Fees refundable to DOS	(7,34,58,389)	4,33,76,648	House Keeping Expense	7,47,315	8,22,481
g.Caution Deposit from Students	0	16,98,000	Audit Fees	1,68,500	1,17,000
h.Increase in TDS, VAT & Labour Cess	0	71,65,183	Legal Expense	2,80,501	49,860
i.Stale cheques	10,03,803	2,69,128	Vehicle Operating Expense	2,03,57,980	2,26,88,800
j.Canteen Accounting Committee	2,05,79,745	1,99,55,104	Electricity & Water Charges	2,57,89,479	2,30,47,743
k.Employee recovery - interest	0	12,336	Travelling Expense	66,69,099	65,74,299
l.Interest received and payable to DOS	2,18,23,933	1,72,72,061	Research & Development Expense	91,28,721	79,53,097
m. Net addition to Statutory Liabilities(Staff)	1,48,24,819	1,61,42,691	Printing & Stationery	38,15,042	35,10,867
n. Unexplained credits - SBI	26,880	0	Advertisement & Publicity	4,46,986	7,97,251

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RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

Receipts	2017-18	2016-17	Payments	2017-18	2016-17
o.Student Activities Account	0	12,99,037	Hospitality Expense	39,16,571	43,17,670
p.Recovery of loans to staff	3,73,024	7,21,571	Telephone & Internet Expense	23,02,813	24,00,330
q. Miscellaneous receipts	20,28,000	10,00,000	Office Expense	26,47,740	25,88,527
r. Sundry debtors	0	68,966	Recruitment Expense	18,53,802	33,70,286
			CEP & IPR Expenses	2,13,725	1,16,975
			Bank Charges	1,645	16,847
			II. Payments made against funds for various projects		
			DST Inspire - Dr. Sakthivel	1,60,903	7,81,298
			DST Inspire - Dr. Mahesh	8,28,939	14,33,643
			SERB - Dr. Seena V	5,75,070	5,75,896
			DST Inspire - Dr. Ambili K M	12,27,163	13,36,725
			DOS-SAC- Dr. Rajesh V J	2,38,095	4,49,225
			SERB - Dr. Roymon Joseph	14,29,959	8,16,457
			AICTE - INAE - PhD - R S Mohankumar	85,000	2,00,000
			NBHM-DAE-PDF- Dr. V.Govindraj	5,50,400	5,78,208
			SERB - Dr. Jayanthi S	3,25,879	11,12,436
			DST - Dr. Rama Rao N	88,33,301	24,81,395
			VSSC - Dr. Natarajan E	1,22,983	1,27,890
			SERB - Dr. Rakesh Kumar Singh	12,73,525	14,17,880
			SAC - NavIC (IRNSS) Gagan	4,78,980	0
			UGC - DAE - Dr. Kuntala B	3,00,000	1,86,332
			ISRO - MOM - Dr. Rajesh VJ	3,59,628	0
			DBT - Dr. Rama Rao N	38,49,952	4,09,113
			DOS - Dr. Rajesh V J (Spectral)	3,64,193	0
			DOS - MOM2 - RPA - Dr. Ambili KM	15,58,488	0
			IISU - Dr. Umesh Kadhane - Proj Assistant	87,968	0
			IISU - Perf. of Ball Bearings - Dr. Jinesh KB	3,532	0
			LPSC - Dr. Umesh K - Monte Carlo Model	1,40,000	0
			LPSC Dr. Umesh K - Plasma Thruster	1,43,846	0
			DRDO - ARMREB - Dr. K. Prabhakaran	3,64,358	0
			DRDO - SASE - Dr. Govindankutty M	3,65,536	0
			Max-Planck - Dr. Jagadheep - 2017	51,226	0
			MeitY SAMEER - Dr. Priyadarshnam	27,540	0
			SERB - Dr. Resmi L - 2017 - Gamma Rays	41,438	0

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RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

Receipts	2017-18	2016-17	Payments	2017-18	2016-17
			SERB - Dr. Seena V - 2017	53,226	0
			AICTE - INAE - Aswathy RV - 2017	1,10,323	0
			ICSSR - PDF - Dr. Sandhya R. S. - 2017	4,18,645	0
			SERB - PDF - Dr. Ishwar Kumar C - 2017	3,47,013	0
			SERB - PDF - Dr. Krishnaswamy R - 2017	6,93,510	0
			SERB - PDF - Dr. Linsha Vazhayal - 2017	7,08,304	0
			SERB - PDF - Dr. Priyanka B - 2017	6,84,913	0
			SERB - INTOPMAA-17	1,83,919	0
			TIFR - Astronomy Olympiad Nurture Camp	1,64,580	0
			DST - PAMC meeting	1,50,528	3,49,472
			SERB - Travel - Dr. Govindan Kutty	10,827	1,71,229
			SERB - Travel- Dr. Gomathi	1,66,596	0
			SERB - Travel- Najeeb P K	1,63,063	0
			SERB - Travel- Veena V S	67,556	0
			SERB - Travel - Dr. Apoorva Nagar	0	59,435
			SERB - Travel - Dr. Rajesh Joseph Abraham	0	1,15,683
			SERB - Travel - Ruchi Sandilya	0	78,391
			SERB - Travel - Vinu RV	0	1,50,000
			SERB - Seminar - NCD 2016	0	75,000
			MOES - CTCZ	0	1,38,546
			SERB - Expert Committee Meeting	0	6,00,000
			KSCSTE - Seminar - SPEED 2016	0	5,85,500
			LPSC - Dr. Umesh Kadhane	0	7,00,833
			NPDE - TCA - 2016 - Seminar	0	9,70,000
			III. Expenditure on Fixed Assets & Capital Work-in-Progress		
			a.Purchase of Fixed Assets	11,93,58,920	14,31,17,932
			b.Expenditure on Capital Work-in-progress	14,94,30,255	15,27,23,683
			IV. Other Payments		
			Security Deposits (Asset) paid	1,53,870	2,68,679
			Security Deposits repaid to Contractors	27,97,387	11,49,757
			Earnest Money Deposits repaid	51,31,346	36,05,789
			Performance Guarantee	5,70,474	8,64,932
			Contingency Advance to Staff	41,917	14,366

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RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31ST MARCH, 2018

(Amount in Rs.)

Receipts	2017-18	2016-17	Payments	2017-18	2016-17
			Loans to staff	50,000	4,26,572
			Canteen Accounting Committee	1,71,29,908	1,52,07,467
			Sundry debtors	1,497	0
			Interest repayment to DOS	0	2,15,15,969
			Stale Cheques - paid	1,82,008	35,344
			Caution Deposit from Students	1,67,794	0
			Student Activities Account	0	16,10,046
			LPSC - Land	1,97,022	3,00,969
			Decrease in TDS, VAT & Labour Cess	52,76,524	0
			Employee recovery - interest (net)	3,776	0
			Tax collected at source	21,000	0
			V. Closing Balances		
			a.Cash in hand	54,361	19,805
			b.Bank Balances		
			In current accounts	7,32,126	21,89,28,930
			In deposit accounts	41,05,78,010	20,50,01,352
			In earmarked/retirement benefits accounts	13,01,48,814	9,46,74,482
Total	**1,54,77,84,131**	**1,48,62,40,238**	**Total**	**1,54,77,84,131**	**1,48,62,40,238**
				0	

Significant Accounting Policies & Notes on Accounts 16

As per our report of even date attached.

For Samsutheen & Co.
Chartered Accountants
FRN : 013162S

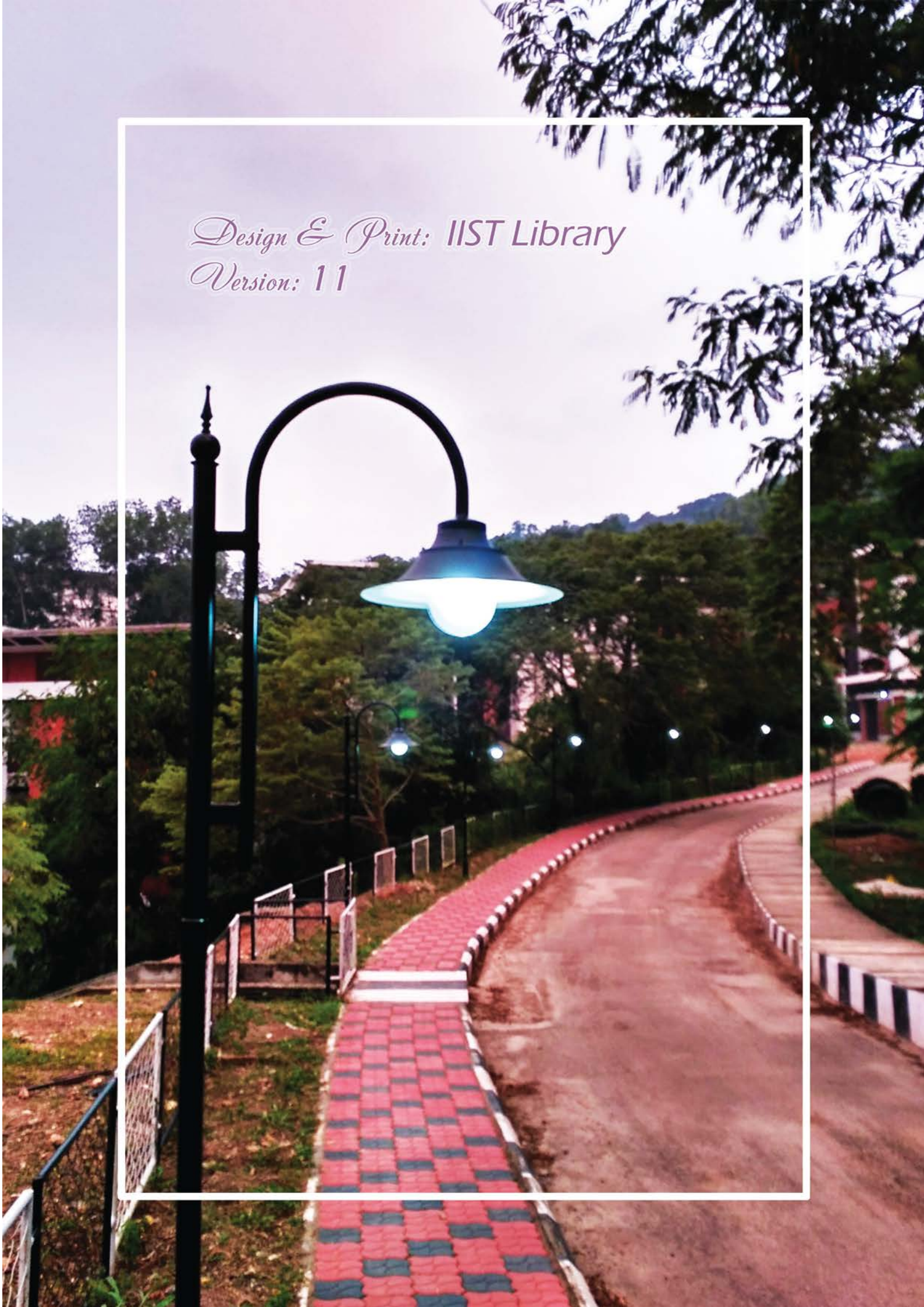
C.A. M. Samsutheen
(Proprietor, Mem No. 200384)

Place : Thiruvananthapuram
Date : 3rd October, 2018

For and on behalf of
Indian Institute of Space Science and Technology (IIST)

Dr. V. K. Dadhwal
Director
3-10-18

R. Hari Prasad
Finance Officer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Indian Institute of Space Science and Technology

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An autonomous institute under Department of Space, Govt. of India
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