Indian Institute of Space Science and Technology

Thiruvananthapuram 695 547

Department of Avionics

Academic Audit Report

2022-2023

Academic audit committee

Internal members

Sl.No.	Faculty Name	Role
1	Dr. N. Selvaganesan, Professor, Avionics	Chairman
2	Dr. Anoop C S, Associate Professor, Avionics	Convenor
3	Dr. E. Natarajan, Professor, Mathematics	Member
4	Dr. Vineeth B. S., Assistant Professor, Avionics	Member

External members

Sl. No.	Name	Designation	Email	Mobile	Name of the Institute	Role
1	Dr. Sivakumaran N.	Professor	nsk@nitt.edu	919443745705	NIT Trichy	Member
2	Dr. Sneha Gajbhiye	Assistant Professor	snehagajbhiye@iitpkd.ac.in	919960727633	IIT Palakkad	Member

I Department profile

1	No. of Permanent Faculty Members	22
2	No. of Adjunct Faculty Members	1
3	No. of Contract Faculty Members	0

4	No. of Guest Faculty Members	0
5	No. of Emeritus Professors / Visiting Faculty Members	0
6	No. of Technical Staff / Tutors (Permanent)	3
7	No. of Technical Staff / Tutors (Contract)	7
8	No. of JRFs/ SRF/ JPF (excluding PhD students)	6
9	No. of Project Fellows	0
10	No. of Research Associates	2
11	No. of Post Doctoral Fellows	0

II Details of academic programmes and student strength in numbers

A .Undergraduate/ Dual Degree / Postgraduate programmes

Sl. No.	Programme	Year	Sanctioned strength in the academic year	Student strength in the academic year (At the start of even semester)	Female student strength in the academic year	No. of passed out Students	Pass Percentage
1	B.Tech.: Electronics and Communication Engineering(Avionics)	I Year	75	72	8	0	0.00
2	B.Tech.: Electronics and Communication Engineering(Avionics)	II Year	0	70	8	0	0.00
3	B.Tech.: Electronics and Communication Engineering(Avionics)	III Year	0	69	2	0	0.00
4	B.Tech.: Electronics and Communication Engineering(Avionics)	IV Year	0	66	6	61	108.20
5	M.Tech.: Control Systems (Standalone)	I Year	18	8	3	0	0.00

6	M.Tech.: Control Systems (Standalone)	II Year	0	7	2	7	100.00
7	M.Tech.: Digital Signal Processing (Standalone)	I Year	18	4	3	0	0.00
8	M.Tech.: Digital Signal Processing (Standalone)	II Year	0	10	1	8	125.00
9	M.Tech.: Power Electronics (Standalone)	I Year	18	5	1	0	0.00
10	M.Tech.: Power Electronics (Standalone)	II Year	0	8	3	7	114.29
11	M.Tech.: RF and Microwave Engineering (Standalone)	I Year	18	10	3	0	0.00
12	M.Tech.: RF and Microwave Engineering (Standalone)	II Year	0	9	3	8	112.50
13	M.Tech.: VLSI and Microsystems (Standalone)	I Year	18	14	1	0	0.00
14	M.Tech.: VLSI and Microsystems (Standalone)	II Year	0	7	0	6	116.67
Total			165	359	44	97	

B. Details of Student Demand Ratio

Programme	No. of students applied	No. of students admitted	Comments	Suggestions
B.Tech.: Electronics and Communication Engineering(Avionics)	5095	72		
M.Tech.: Control Systems (Standalone)	226	9		
M.Tech.: Digital Signal Processing (Standalone)	188	4		
M.Tech.: Power Electronics (Standalone)	126	5		
M.Tech.: RF and Microwave Engineering (Standalone)	149	10		
M.Tech.: VLSI and Microsystems (Standalone)	222	14		

C. Doctoral Degree

PhD	During the academic year			Degree awarded
	Sanctioned seats	No. of students admitted	Current student strength	
PART TIME	4	4	0	1
FULL TIME	46	21	62	6
Total	50	25	62	7

III Details of core courses and electives in each programme

Sl. No.	Programme Name	Course code	Course name	Core/ Elective	Credits assigned	As per curriculum revision/ newly added elective course/ syllabus revised
1	B.Tech.: Aerospace Engineering	AVD862	Digital Image Processing	Institute Elective	3	
2	B.Tech.: Aerospace Engineering	AVD888	Complex Networks	Institute Elective	3	
3	B.Tech.: Aerospace Engineering	AV435	Instrumentation and Control Systems Lab	Core	2	
4	B.Tech.: Aerospace Engineering	AV461	Advanced Control Theory	Elective	3	
5	B.Tech.: Aerospace Engineering	AV315	Automatic Control	Core	3	
6	B.Tech.: Aerospace Engineering	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
7	B.Tech.: Aerospace Engineering	AVD624	Computer Vision	Institute Elective	3	
8	B.Tech.: Aerospace Engineering	AVD871	Applied Markov Decision Process and Reinforcement Learning	Core	3	
9	B.Tech.: Aerospace Engineering	AV121	Data Structures and Algorithms	Core	4	
10	B.Tech.: Aerospace Engineering	AV122	Basic Electrical and Electronics Engineering	Core	4	
11	B.Tech.: Electronics and Communication Engineering(Avionics)	AV411	Navigation Systems and Sensors	Core	3	
12	B.Tech.: Electronics and Communication Engineering(Avionics)	AV412	Satellite and Optical Communication	Core	3	
13	B.Tech.: Electronics and Communication Engineering(Avionics)	AV461	Advanced Control Theory	Elective	3	
14	B.Tech.: Electronics and Communication Engineering(Avionics)	AV491	Advanced Sensors and Interface Electronics	Elective	3	

15	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD613	Machine learning for signal processing	Elective	3	
16	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD862	Digital Image Processing	Institute Elective	3	
17	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD888	Complex Networks	Institute Elective	3	
18	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM612	Introduction to Micro Electromechanical Systems(MEMS)	Elective	3	
19	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM613	Analog VLSI Circuits	Elective	3	
20	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM614	Digital VLSI Circuits	Elective	3	
21	B.Tech.: Electronics and Communication Engineering(Avionics)	AVP612	AC Motor Drives	Elective	3	
22	B.Tech.: Electronics and Communication Engineering(Avionics)	AV431	Navigation Systems and Sensors Lab	Core	1	
23	B.Tech.: Electronics and Communication Engineering(Avionics)	AV451	Summer Internship and Training	Core	3	
24	B.Tech.: Electronics and Communication Engineering(Avionics)	AV452	Comprehensive Viva-Voce	Core	3	
25	B.Tech.: Electronics and Communication Engineering(Avionics)	AV453	Project Work		12	
26	B.Tech.: Electronics and Communication Engineering(Avionics)	AV311	Digital Signal Processing	Core	3	
27	B.Tech.: Electronics and Communication Engineering(Avionics)	AV312	Computer Architecture and Organization	Core	3	
28	B.Tech.: Electronics and Communication Engineering(Avionics)	AV313	RF and Microwave Communication	Core	3	
29	B.Tech.: Electronics and Communication Engineering(Avionics)	AV314	Communication System I	Core	3	

30	B.Tech.: Electronics and Communication Engineering(Avionics)	AV331	Digital Signal Processing Lab	Core	1	
31	B.Tech.: Electronics and Communication Engineering(Avionics)	AV332	Microprocessor and Microcontroller Lab		2	
32	B.Tech.: Electronics and Communication Engineering(Avionics)	AV333	RF and Microwave Communication Lab	Core	1	
33	B.Tech.: Electronics and Communication Engineering(Avionics)	AV321	Computer Networks	Core	3	
34	B.Tech.: Electronics and Communication Engineering(Avionics)	AV322	Power Electronics	Core	3	
35	B.Tech.: Electronics and Communication Engineering(Avionics)	AV323	VLSI Technology	Core	3	
36	B.Tech.: Electronics and Communication Engineering(Avionics)	AV324	Communication System II	Core	3	
37	B.Tech.: Electronics and Communication Engineering(Avionics)	AV466	Estimation and Stochastic Theory	Institute Elective	3	
38	B.Tech.: Electronics and Communication Engineering(Avionics)	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
39	B.Tech.: Electronics and Communication Engineering(Avionics)	AV477	Radar System	Elective	3	
40	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD624	Computer Vision	Institute Elective	3	
41	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD871	Applied Markov Decision Process and Reinforcement Learning	Institute Elective	3	
42	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM862	RF Integrated Circuits	Elective	3	
43	B.Tech.: Electronics and Communication Engineering(Avionics)	AV341	Computer Networks Lab	Core	1	

44	B.Tech.: Electronics and Communication Engineering(Avionics)	AV342	Power Electronics Lab	Core	1	
45	B.Tech.: Electronics and Communication Engineering(Avionics)	AV343	Communication System Lab	Core	1	
46	B.Tech.: Electronics and Communication Engineering(Avionics)	AV211	Analog Electronic Circuits	Elective	3	
47	B.Tech.: Electronics and Communication Engineering(Avionics)	AV212	Semiconductor Devices	Elective	3	
48	B.Tech.: Electronics and Communication Engineering(Avionics)	AV213	Network Analysis	Elective	3	
49	B.Tech.: Electronics and Communication Engineering(Avionics)	AV214	Electromagnetic and Wave Propagation	Elective	4	
50	B.Tech.: Electronics and Communication Engineering(Avionics)	AV231	Analog Electronic Circuit Lab	Core	1	
51	B.Tech.: Electronics and Communication Engineering(Avionics)	AV232	E-CAD Lab	Core	1	
52	B.Tech.: Electronics and Communication Engineering(Avionics)	AV221	Digital Electronics and VLSI Design	Core	3	
53	B.Tech.: Electronics and Communication Engineering(Avionics)	AV222	Instrumentation and Measurement	Core	3	
54	B.Tech.: Electronics and Communication Engineering(Avionics)	AV223	Signals and Systems	Core	3	
55	B.Tech.: Electronics and Communication Engineering(Avionics)	AV224	Control System	Core	3	
56	B.Tech.: Electronics and Communication Engineering(Avionics)	AV241	Digital Electronics and VLSI Design Lab	Core	1	
57	B.Tech.: Electronics and Communication Engineering(Avionics)	AV242	Instrumentation and Measurement Lab		1	
58	B.Tech.: Electronics and Communication Engineering(Avionics)	AV243	Control System Lab	Core	1	

59	B.Tech.: Electronics and Communication Engineering(Avionics)	AV121	Data Structures and Algorithms	Core	4	
60	B.Tech.: Electronics and Communication Engineering(Avionics)	AV122	Basic Electrical and Electronics Engineering	Core	4	
61	Dual Degree: Astronomy & Astrophysics	AVD862	Digital Image processing	Elective	3	
62	Dual Degree: Optical Engineering	AVD888	Complex Networks	Elective	3	
63	Dual Degree: Engineering Physics	AV337	Instrumentation and Measurement Lab	Core	1	
64	Dual Degree: Engineering Physics	AV466	Estimation and Stochastic Theory	Institute Elective	3	
65	Dual Degree: Engineering Physics	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
66	Dual Degree: Engineering Physics	AVD871	Applied Markov Decision Process and Reinforcement Learning	Institute Elective	3	
67	Dual Degree: Engineering Physics	AV211	Analog Electronic Circuits	Elective	3	
68	Dual Degree: Engineering Physics	AV222	Instrumentation and Measurement	Core	3	
69	Dual Degree: Engineering Physics	AV223	Signals and Systems	Core	3	
70	Dual Degree: Engineering Physics	AV121	Data Structures and Algorithms	Core	4	
71	Dual Degree: Engineering Physics	AV122	Basic Electrical and Electronics Engineering	Core	4	
72	M.Tech.: RF and Microwave Engineering	AVR852	Project Work Phase I	Core	15	
73	M.Tech.: RF and Microwave Engineering	AVR854	Seminar - III	Core	2	
74	M.Tech.: RF and Microwave Engineering	AVR853	Project Work Phase II	Core	18	
75	M.Tech.: RF and Microwave Engineering	AVR611	Advanced Electromagnetic Engineering	Core	3	

76	M.Tech.: RF and Microwave Engineering	AVR612	Microwave Circuits and Systems	Core	3	
77	M.Tech.: RF and Microwave Engineering	AVR613	Microwave Semiconductor Devices	Core	3	
78	M.Tech.: RF and Microwave Engineering	AVD611	Modern Signal Processing	Elective	3	
79	M.Tech.: RF and Microwave Engineering	AVR631	Microwave Circuit Lab	Core	1	
80	M.Tech.: RF and Microwave Engineering	AVR614	Seminar I	Core	1	
81	M.Tech.: RF and Microwave Engineering	AVR621	Antenna Theory and Design	Core	3	
82	M.Tech.: RF and Microwave Engineering	AVR622	Computational Methods for Electromagnetics	Core	3	
83	M.Tech.: RF and Microwave Engineering	AVR871	Electromagnetic and Microwave Application of Metamaterials	Elective	3	
84	M.Tech.: RF and Microwave Engineering	AVM862	RF Integrated Circuits	Elective	3	
85	M.Tech.: RF and Microwave Engineering	AVM878	Photonic Integrated Circuit	Elective	3	
86	M.Tech.: RF and Microwave Engineering	AVR641	Antenna Design Lab	Core	1	
87	M.Tech.: RF and Microwave Engineering	AVR852	RF Engineering Design	Core	2	
88	M.Tech.: RF and Microwave Engineering	AVR853	Seminar - II	Core	2	
89	M.Tech.: Digital Signal Processing	AVD644	Summer Design Project	Core	2	
90	M.Tech.: Digital Signal Processing	AVD852	Project Work Phase I	Core	15	
91	M.Tech.: Digital Signal Processing	AVD853	Project Work Phase II	Core	18	

92	M.Tech.: Digital Signal Processing	AVD611	Modern Signal Processing	Core	3	
93	M.Tech.: Digital Signal Processing	AVD612	Computational methods for Signal Processing	Core	2	
94	M.Tech.: Digital Signal Processing	AVD613	Machine Learning for Signal Processing	Core	4	
95	M.Tech.: Digital Signal Processing	AVD862	Digital Image Processing	Elective	3	
96	M.Tech.: Digital Signal Processing	AVD888	Complex Network	Elective	3	
97	M.Tech.: Digital Signal Processing	AVHSD001	Human values, Professional Ethics and Communication	Core	1	
98	M.Tech.: Digital Signal Processing	AVD621	Estimation and Detection Theory	Core	3	
99	M.Tech.: Digital Signal Processing	AVD622	Signal Processing for Communication	Core	4	
100	M.Tech.: Digital Signal Processing	AVD864	Computer Vision	Elective	3	
101	M.Tech.: Digital Signal Processing	AVM862	RF Integrated Circuits	Elective	3	
102	M.Tech.: Digital Signal Processing	AVD871	Applied Markov Decision Processes and Reinforcement Learning	Elective	3	
103	M.Tech.: Digital Signal Processing	AVD887	Internet of Things	Elective	3	
104	M.Tech.: Digital Signal Processing	AVD879	Information Theory and Coding	Elective	3	
105	M.Tech.: Digital Signal Processing	AVD851	Innovative Design Project	Core	1	
106	M.Tech.: VLSI and Microsystems	AVM851	Summer Design Project	Core	2	
107	M.Tech.: VLSI and Microsystems	AVM853	Project Phase-I	Core	15	
108	M.Tech.: VLSI and Microsystems	AVM854	Project Work Phase - II	Core	18	
109	M.Tech.: VLSI and Microsystems	AVM611	Fundamentals of VLSI Devices	Core	3	

110	M.Tech.: VLSI and Microsystems	AVM612	Introduction to Micro Electromechanical Systems(MEMS)	Core	3	
111	M.Tech.: VLSI and Microsystems	AVM613	Analog VLSI Circuits	Core	3	
112	M.Tech.: VLSI and Microsystems	AVM614	Digital VLSI Circuits	Core	3	
113	M.Tech.: VLSI and Microsystems	AVC868	Advanced Sensors and Interface Electronics	Elective	3	
114	M.Tech.: VLSI and Microsystems	AVD611	Modern Signal Processing	Elective	3	
115	M.Tech.: VLSI and Microsystems	AVM631	VLSI Design Lab	Core	1	
116	M.Tech.: VLSI and Microsystems	AVM851	Electronic Hardware Design Project	Core	2	
117	M.Tech.: VLSI and Microsystems	AVM621	Micro/Nano Fabrication Technology	Core	3	
118	M.Tech.: VLSI and Microsystems	AVM861	Mixed Signal VLSI Design	Elective	3	
119	M.Tech.: VLSI and Microsystems	AVM862	RF Integrated Circuits	Elective	3	
120	M.Tech.: VLSI and Microsystems	AVM863	VLSI Digital Signal Processing	Elective	3	
121	M.Tech.: VLSI and Microsystems	AVM866	Power Management IC	Elective	3	
122	M.Tech.: VLSI and Microsystems	AVM867	Architectureal Design of Digital Integrated Circuits	Elective	3	
123	M.Tech.: VLSI and Microsystems	AVM878	Photonic Integrated Circuits	Elective	3	
124	M.Tech.: VLSI and Microsystems	AVM881	Advanced Nueral Science for Engineers	Elective	3	
125	M.Tech.: VLSI and Microsystems	AVM882	Introduction to Embedded System Design	Elective	3	

IV Review on Curriculum

Criteria	Reponse	Revision made during this academic year	Comments on curriculum, if any	Suggestions for improvement
Qualitative comment on the content of the curriculum	VERYGOOD			

V Review on Teaching, Learning and Evaluation

Sl. No.	Criteria	Response based on criteria	Comments	Suggestions
1	Any innovative teaching methods/aids adopted?	Yes Course webpages and supporting material were set up by the faculty members using IIST's Moodle server. In some courses, classroom demonstrations were used to reinforce the theoretical concepts taught in class.		
2	Is any e-learning modules developed?	Yes Recorded Lectures are available for a set of courses.		
3	**Student evaluation procedure**			

Criteria	Response	Comments	Suggestions
Course evaluation			
Project evaluation		Internal (with inputs from external project guides for those projects which were done outside IIST)	

4	**Evaluation components**

Criteria	Response	Comments	Suggestions
Theory	Continuous assesment and end semester exam Continuous assesment and course project Continuous assesment and end semester exam, Continuous assesment and course project		

	Lab	Continuous assesment and end semester exam Continuous assesment and course project Continuous assesment and end semester exam, Continuous assesment and course project		
	Project/ Internship/ Seminar	Mid term evaluaion and final evaluation		
5	**Continuous Assessment Components**			
	Theory	Quiz I Quiz II		
	Lab	Class exercise evaluation End Semester Examination Class exercise evaluation & End Semester Examination Lab Course: Lab exercise evaluation, Attendance, viva, report evaluation, mini projects		
6	Is there any remedial coaching to support weak performers?	Yes	For some theory courses, additional classes, tutorial sessions, problem solving sessions were conducted. For some lab courses, TA/ instructor led discussions, as well as make-up lab sessions were conducted for students unable to finish the lab tasks within allotted time.	
7	Is academic feedback from students taken regularly?	Yes	In a semester, feedback regarding courses is taken in class committee meetings where the students are encouraged to let the faculty members know the issues they are facing in each course. Academic feedback is also taken at the end of every semester, for each course. Students give anonymous feedback online on the courses they have attended at the end of each semester.	

8	What are the steps taken based on student's feedback?	Based on feedback received during class committee meetings, individual faculty members tune various aspects of their course such as teaching speed, supporting material, problem sheets to suit the current batch of students. The academic feedback obtained at the end of the semester is also used to improve the teaching and supporting material, overall course content and course evaluations for succeeding semesters.		
9	Is Class committee meetings conducted?	Yes Class committee meetings are conducted every semester, for all courses at UG and PG level. The meetings are attended by course instructors and a representative set of students, and class committee minutes are recorded, and adequate corrective actions are taken.		

VI Department faculty credentials

Sl. No.	Criteria	Response	Comments	Suggestions
1	Percentage of faculty with PhD	100		
2	No. of journal articles published	52		
3	No. of books published	1		
4	No. of book chapters published	2		
5	No. of invited talks/ conferences/ workshops attended	38		
6	No. of research projects funded by IIST			
7	No. of research projects funded through ASRG/IIST-ISRO/DoS	9		
8	No. of externally funded research projects like CSIR, DST, DRDO etc.	9		
9	No. of patents published/ awarded	3		
10	No. of patents filed	0		
11	No. of faculty/student awards received	14		
12	No. of conferences/Workshops/ seminars/Colloquium Organized	19		

13	No. of conference paper published	48		
14	No. of visits made by the faculty/ student for research collaborations/invited talks/ conferences abroad			
15	No. of Industry collaborative projects			
16	No. of ISRO mission related projects/ activities	3		
17	No. of consultancy services entertained	0		

VIII Details of student co-curricular activities

Criteria	Response	Comments	Suggestions
Whether students are involved in extra curricular & co-curricular activities?	Yes Conscentia and Dhanak are conducted every year with eager participation from B.Tech as well as other students on campus. Sports day is conducted every year.		
Whether students are doing internship abroad?			
Whether students are doing internship at national academic institutes / universities?			

Whether students are doing internship at ISRO/ Industries/ R&D institutes?	Yes Externally sponsored	1. Oddi Nikhil Sanjiv - CDAC, BLR 2. Shriram TG - CDAC, BLR 3. Revathi Gunasekaran- RF & Microwave Engineering- M/s Centum Electronics 4. Mukul Kumar Jobra -Digital Signal Processing -M/s Centum Electronics 5. Rudranath Palit Digital Signal Processing M/s Centum Electronics 6. Aruna Shaju Kollannur -Digital Signal Processing- M/s INTEL 7. Priyank Zaveri -Digital Signal Processing- M/s INTEL 8. Rudranath Palit -Digital Signal Processing- M/s INTEL 9. Aruna Shaju Kollannur- Digital Signal Processing- M/s C DAC 10. Shyam Kumar Singh -RF & Microwave Engineering- M/s Mercedes Benz 11. Rushikesh Patil -VLSI & Microsystems- M/s Mercedes Benz 12. Jaya Sridhar NK -VLSI & Microsystems- M/s Mercedes Benz 13. Chirag Agarwal- VLSI & Microsystems -M/s C-DAC, HYD 14. Prashant Shashikant Pandey -VLSI & Microsystems- M/s C-DAC, BLR 15. 19 Prashant Shashikant Pandey- VLSI & Microsystems -M/s Global Foundries 16. Chirag Agarwal- VLSI & Microsystems -M/s ST Microelectronics 17. Revathi S -Control Systems -M/s Aadyah Aerospace 18. Amal S Thomas -Power Electronics- M/s Robert Bosch 19. Sidharth Shivdas -Power Electronics -M/s Robert Bosch 20. Shaantanu Tayade -VLSI & Microsystems- M/s C-DAC, HYD 21. Jitendra Kumar -VLSI & Microsystems - M/s SM Technology	

Whether the department conducts outreach programs?	Yes More than 16 conferences/ workshops/ seminars/ FDPs, participated by faculty members ◆ Reviews /Technical discussions at ISRO /other organizations/Institutes ◆ Contributed to various outreach activities for school/ college students initiated by Student Activity Board at IIST ◆ IEEE student chapter has been operational and active since 2011. 5 student branch chapters are operational as of today under this. Various workshops and seminars were organised by these branch chapters. The department of Avionics in collaboration with the student branch chapters has organised 17 expert lectures and hands on workshops.		
Whether department has alumni activities?	No Alumni activities are coordinated by an institute wide alumni cell.		

IX Details of placement/ higher studies of students

Criteria	UG	PG	PhD	Comments	Suggestions
No. of students placed	78	66	0		
No. of students opted for higher studies	0	11	0		
No. of students cleared GATE/ SLET/ NET/ CSIR/ UGC/ Others etc.	3	0	0		

X Infrastructure in the Department

Sl. No.	Criteria	Response	Comments	Suggestions
1	No. of classrooms	7		
2	No. of seminar/ conference rooms	1		

3	No. of instruction labs	14		
4	No. of research labs	16		
5	No. of full-fledged e-learning classrooms	1		
6	No. of computing labs	1		
7	Is there any lab with potential for centre of excellence?	Computer Vision and Virtual Reality Lab (CVVR lab) Nems and Opto-Nanoelectronics (NEMO)		
8	Is there any labs sponsored by external agency?			
9	Inter-disciplinary research facility	Biosensor and Gas sensor lab, SSPACE		
10	Is there any common amenities like restroom, recreation club, etc.?	2 restrooms on each floor, 1 Badminton court and 1 Table tennis.		
11	Is there any facilities for differently abled?	Lift facility and Separate restroom for differently abled.		
12	Is there any Department library?	Institute level library is available.		

XII Additional Information

1.	Does the curriculum of each programme offered by the department provide the Programme Educational Objectives (PEOs)/Programme Specific Outcomes (PSOs) and Programme Outcomes (POs)?	Yes
2.	Do the courses offered in each programme by the department provide the Course Objectives and Course Outcomes (COs) written in clear terms?	Yes
3.	Give the status of adopting Choice Based Credit System (CBCS) in the programmes offered by the department	Implemented
4.	Give the status of adopting Objective Based Education (OBE) in the programmes offered by the department.	Action Initiated
5.	Satisfaction level of support of academic, administrative, and other support units of the institution	Very good
6.	The status of taking feedback from stakeholders and expert groups for revision and design of curriculum of a programme.	Student Faculty Employers Academic Peers

7.	The list of extension programmes conducted by the department	More than 16 conferences/ workshops/ seminars/ FDPs, participated by faculty members • Reviews /Technical discussions at ISRO /other organizations/ Institutes • Contributed to various outreach activities for school/ college students initiated by Stude
8.	List Faculty Development Programme conducted (any programme aiming at updating the knowledge of faculty of the department).	Faculty training programme on 5G wireless communication technology, organised by IEEE India council - S. Chris Prema. TCAD Circuit Simulation Workshop, dually organized by IIT Bombay and Synopsys - Seena V. INUP- i2i Online Familiarization Workshop
9.	Does students take projects involving Field work/Survey. If yes, give the list.	Yes. Many of the internship students have carried out internship/final-year project, involving field work and/or actual implementation

10.	The List of MoU and MoAs, that are currently operational during the year.	MOUs with University of Colorado, Boulder, NTU, Singapore, Caltech, USA and University of Surrey, UK, LAAS-CNRS, France, EWI TU DELFT, Netherlands
11.	Detail the mechanism adopted to help academically disadvantaged students to cope with academic requirements	Additional class sessions and/or tutorial classes were taken for many of the difficult theory subjects. Compensation lab sessions were also held, in case students were not able to complete the lab within the stipulated time frame.
12.	Detail the mechanism adopted to help students who perform very much below the class averages	Quiz-3 was conducted for first year students, in case they did not perform well in quiz 1 and 2. Supplementary exams were conducted in the summer timeframe for students who could not obtain pass grades.
13.	The total grant/revenue generated/received from different agencies by the department conducting research projects/consultancy services during the year.	1560 Lakhs
14.	The suggestions to improve the efficiency and effectiveness of the IIST system.	Detailed suggestions is provided in Section XIV and XV.

XIII. Strength of the Department (maximum 150 words).

The department has faculty doing active research and development in several areas which are relevant. Faculty members have published around 52 journal articles as well as attended around 38 conferences. Multiple patents were filed. Recognition for the efforts of the faculty members were reflected in around 14 awards. Collaboration with ISRO and other external funding agencies were strengthened by around 16 new project proposals which were approved. Multiple students at both undergraduate and graduate level had the opportunity to complete their projects in IIST as well as in other industries and govt. agencies. More than 50% of the undergraduate students were placed in ISRO and a total of 66 M.Tech students obtained jobs in industry. The department, faculty members, and students are able to deliver quality work and projects.

XIV. Weakness of the Department (maximum 150 words).

The department offers an undergraduate programme as well as five postgraduate programs. The teaching load for faculty members continues to be high since the department hopes to further enhance contributions to the overall research and development of IIST via higher number of publications, industry projects and collaborations. Improvement of student placement for internships as well as after graduation can be strengthened by improving the department's alumni network. This network is a valuable resource for students seeking career guidance and internship opportunities. This is especially relevant given the change in processes regarding BTech absorption into ISRO.

XV. Challenges (maximum 150 words).

As with any academic department, the Avionics department trains manpower (at both undergraduate and postgraduate levels) for roles in the industry as well as academia. Since the requirements of industry roles change at a rapid pace, it is challenging for an academic department to constantly adapt their curriculum to ensure students graduate with the most relevant skills and knowledge. For continued growth of the department, funding, as well as student placements, close collaborations with the industry are required, this requires formulation of an institute wide policy for industry collaborations. Solving such challenges can also lead to effective approaches for handling budgetary constraints. The department faculty on average have a high teaching load which needs to be reduced so that more focus can be given for research output as well as other academic activities such as curriculum design, student mentorship and guidance, ISRO/ASRG projects. Timely recruitment of faculty members is a challenge that needs to be met by effective optimization of recruitment procedures. Student's needs and styles of learning are changing, it is a major challenge for the department to incorporate new teaching and evaluation methods into the curriculum.

XVI. Opportunities (maximum 150 words).

By fostering a collaborative and research-oriented environment within the department, there are multiple opportunities for faculty members, students, and staff to take part in cutting edge research projects within the institute (such as in collaboration with SSPACE) as well as in collaboration with ISRO (through ASRG). With the processes already put in place, the department can continuously update curriculum in accordance with NEP standards and make it relevant to the industry as well. There are opportunities for faculty members to

attend as well as organize faculty development programmes, workshops, and conferences for professional update as well as for networking. Such opportunities, if used wisely, would help the department to maintain high academic standards and support faculty in their teaching and research endeavors.

Final Recommendations:

The Department of Avionics is moving on the right track and providing excellent performance, in terms of research outputs, sponsored projects, teaching excellence and industrial collaborations. The department faculty is meticulously managing a B. Tech program in Electronics and Communication and five postgraduate programs, in addition to doctoral and post-doctoral students. The department has active collaboration with ISRO and other sponsoring agencies. Industry-oriented courses with open projects may be introduced into the curriculum, keeping in view the demands of the industry. Industry counterparts may be invited to offer such courses. Faculty and staff strength may be enhanced to meet the teaching, research and technology transfer requirements of the department.

On the day of meeting, the team verified all the documents and records available in the department and evaluated the academic process. A detailed report of the audit is given above. The report is signed by the following:

Date of meeting: 11th July, 2024

14/7/2024

Dr. E. Natarajan,
Professor, Department of Mathematics, IIST

14/07/24
Dr. Anoop C.S.,
Avionics Dept., IIST

Dr. Sneha Gajbhiye
Assistant Professor
Department of Electrical Engineering
IIT Palakkad

11/7/24

Dr. Sivakumaran N.
Professor,
NIT Trichy

14/07/2024
Dr. Vineeth B.S
Avionics Dept, IIST

Signature of Committee members

Dr. N. Selvaganesan / Professor & Head
आचार्य एवं अध्यक्ष / Professor & Head
एवियोनिकी विभाग / Department of Avionics
भारतीय अंतरिक्ष विज्ञान एवं प्रौद्योगिकी संस्थान
Indian Institute of Space Science and Technology
अंतरिक्ष विभाग, भारत सरकार
Dept. of Space, Govt. of India
तिरुवनंतपुरम / Thiruvananthapuram - 695547

Approved by,

Dean Academics, IIST

प्रोफ. कुरुविळा जोसफ़/Prof. Kuruvilla Joseph
डीन (शैक्षिकी), आईआईएसटी
Dean (Academics), IIST