Indian Institute of Space Science and Technology

Thiruvananthapuram 695 547
Department of Avionics
Academic Audit Report
2021-2022

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. BASUDEV MAJUMDER, Assistant Professor, Avionics	Member
4	Dr. E. Natarajan, Professor, Mathematics	Member

External members

Sl. No.	Name	Designation	Email	Mobile	Name of the Institute	Role
1	Prof. 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	1

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)	6
8	No. of JRFs/ SRF/ JPF (excluding PhD students)	6
9	No. of Project Fellows	6
10	No. of Research Associates	0
11	No. of Post Doctoral Fellows	1

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.: Avionics	I Year	0	0	0	0	0.00
2	B.Tech.: Avionics	II Year	0	0	0	0	0.00
3	B.Tech.: Avionics	III Year	0	0	0	0	0.00
4	B.Tech.: Avionics	IV Year	0	0	0	0	0.00
5	B.Tech.: Electronics and Communication Engineering(Avionics)	I Year	69	64	2	0	0.00
6	B.Tech.: Electronics and Communication Engineering(Avionics)	II Year	0	66	6	0	0.00
7	B.Tech.: Electronics and Communication Engineering(Avionics)	III Year	0	60	2	0	0.00

8	B.Tech.: Electronics and Communication Engineering(Avionics)	IV Year	0	60	9	0	0.00
9	M.Tech.: Control Systems (Standalone)	I Year	10	8	3	0	0.00
10	M.Tech.: Control Systems (Standalone)	II Year	0	7	0	7	100.00
11	M.Tech.: Digital Signal Processing (Standalone)	I Year	10	9	1	0	0.00
12	M.Tech.: Digital Signal Processing (Standalone)	II Year	0	7	0	4	175.00
13	M.Tech.: Power Electronics (Standalone)	I Year	10	10	3	0	0.00
14	M.Tech.: Power Electronics (Standalone)	II Year	0	5	0	6	83.33
15	M.Tech.: RF and Microwave Engineering (Standalone)	I Year	10	8	2	0	0.00
16	M.Tech.: RF and Microwave Engineering (Standalone)	II Year	0	5	0	3	166.67
17	M.Tech.: VLSI and Microsystems (Standalone)	I Year	10	8	3	0	0.00
18	M.Tech.: VLSI and Microsystems (Standalone)	II Year	0	7	0	7	100.00
Total			119	324	31	27	

B. Details of Student Demand Ratio

Programme	No. of students applied	No. of students admitted	Comments	Suggestions
B.Tech.: Avionics	0	0		
B.Tech.: Electronics and Communication Engineering(Avionics)	4694	67		
M.Tech.: Control Systems (Standalone)	337	7		
M.Tech.: Digital Signal Processing (Standalone)	199	10		
M.Tech.: Power Electronics (Standalone)	247	9		
M.Tech.: RF and Microwave Engineering (Standalone)	315	8		
M.Tech.: VLSI and Microsystems (Standalone)	241	9		

C. Doctoral Degree

PhD	During the academic year			Degree awarded
	Sanctioned seats	No. of students admitted	Current student strength	
PART TIME	2	2	0	0
FULL TIME	16	9	59	2

Total	18	11	59 ·	2

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	AV490	Deep Learning and Computational Data Sciences	Institute Elective	3	
1	B.Tech.: Aerospace Engineering	AV490	Deep learning for Computational Data Science	Institute Elective	3	
2	B.Tech.: Aerospace Engineering	AV435	Instrumentation and Control Systems Lab	Core	2	
2	B.Tech.: Aerospace Engineering	AV435	Instrumentation and Control Systems Lab	Core	2	
3	B.Tech.: Aerospace Engineering	AV315	Automatic Control	Core	3	
3	B.Tech.: Aerospace Engineering	AV315	Automatic Control	Core	3	
4	B.Tech.: Aerospace Engineering	AV461	Advanced Control Theory	Institute Elective	3	
4	B.Tech.: Aerospace Engineering	AVC881	Modelling and Control of Robotic Systems	Elective	3	
5	B.Tech.: Aerospace Engineering	AV489	Machine Learning for Signal Processing	Institute Elective	3	
5	B.Tech.: Aerospace Engineering	AV111	Basic Electrical Engineering	Core	3	
6	B.Tech.: Aerospace Engineering	AV111	Basic Electrical Engineering	Core	3	
6	B.Tech.: Aerospace Engineering	AV121	Basic Electronics Engineering	Core	3	
7	B.Tech.: Aerospace Engineering	AV121	Basic Electronics Engineering	Core	3	
7	B.Tech.: Aerospace Engineering	AV141	Basic Electrical and Electronics Engineering Lab	Core	1	

8	B.Tech.: Aerospace Engineering	AV141	Basic Electrical and Electronics Engineering Lab	Core	1	
8	B.Tech.: Electronics and Communication Engineering(Avionics)	AV411	Navigation Systems and Sensors	Core	3	
9	B.Tech.: Avionics	AV411	Navigation Systems and Sensors	Core	3	
9	B.Tech.: Electronics and Communication Engineering(Avionics)	AV412	Satellite and Optical Communication	Core	3	
10	B.Tech.: Avionics	AV412	Satellite and Optical Communication	Core	3	
10	B.Tech.: Electronics and Communication Engineering(Avionics)	AV473	Information Theory and Coding	Elective	3	
11	B.Tech.: Avionics	AV484	Wireless Mesh Networks	Elective	3	
11	B.Tech.: Electronics and Communication Engineering(Avionics)	AV485	Microelectronics and Microsystems Technologies	Elective	3	
12	B.Tech.: Avionics	AV485	Microelectronics and Microsystem Technologies	Elective	3	
12	B.Tech.: Electronics and Communication Engineering(Avionics)	AV486	Antenna Theory and Design	Elective	3	
13	B.Tech.: Avionics	AV486	Analog VLSI Circuits	Elective	3	
13	B.Tech.: Electronics and Communication Engineering(Avionics)	AV490	Deep learning for Computational Data Science	Institute Elective	3	
14	B.Tech.: Avionics	AV490	Deep Learning and Computational Data Sciences	Institute Elective	3	
14	B.Tech.: Electronics and Communication Engineering(Avionics)	AV491	Advanced Sensors and Interface Electronics	Elective	3	
15	B.Tech.: Avionics	AVD611	Advanced Digital Signal Processing	Elective	3	

15	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM613	Analog VLSI Circuits	Elective	3	
16	B.Tech.: Avionics	AVP613	Control of AC Motor Drives	Elective	3	
16	B.Tech.: Electronics and Communication Engineering(Avionics)	AVP613	Control of AC motor Drives	Elective	3	
17	B.Tech.: Avionics	AVR612	Microwave Circuits and Systems	Elective	3	
17	B.Tech.: Electronics and Communication Engineering(Avionics)	AV431	Navigation Systems and Sensors Lab	Core	1	
18	B.Tech.: Avionics	AV431	Navigation Systems and Sensors Lab	Core	1	
18	B.Tech.: Electronics and Communication Engineering(Avionics)	AV451	Summer Internship and Training	Core	3	
19	B.Tech.: Avionics	AV451	Summer Internship and Training	Core	3	
19	B.Tech.: Electronics and Communication Engineering(Avionics)	AV452	Comprehensive Viva-Voce	Core	3	
20	B.Tech.: Avionics	AV452	Comprehensive Viva-Voce	Core	3	
20	B.Tech.: Electronics and Communication Engineering(Avionics)	AV453	Project Work	Core	12	
21	B.Tech.: Avionics	AV453	Project Work	Core	12	
21	B.Tech.: Electronics and Communication Engineering(Avionics)	AV311	Digital Signal Processing	Core	3	
22	B.Tech.: Electronics and Communication Engineering(Avionics)	AV311	Digital Signal Processing	Core	3	
22	B.Tech.: Electronics and Communication Engineering(Avionics)	AV312	Computer Architecture and Organization	Core	3	
23	B.Tech.: Electronics and Communication Engineering(Avionics)	AV312	Computer Architecture and Organization	Core	3	
23	B.Tech.: Electronics and Communication Engineering(Avionics)	AV313	RF and Microwave Communication	Core	3	

24	B.Tech.: Electronics and Communication Engineering(Avionics)	AV313	RF and Microwave Communication	Core	3
24	B.Tech.: Electronics and Communication Engineering(Avionics)	AV314	Communication System I	Core	3
25	B.Tech.: Electronics and Communication Engineering(Avionics)	AV314	Communication System I	Core	3
25	B.Tech.: Electronics and Communication Engineering(Avionics)	AV331	Digital Signal Processing Lab	Core	1
26	B.Tech.: Electronics and Communication Engineering(Avionics)	AV331	Digital Signal Processing Lab	Core	1
26	B.Tech.: Electronics and Communication Engineering(Avionics)	AV332	Microprocessor and Microcontroller Lab	Core	2
27	B.Tech.: Electronics and Communication Engineering(Avionics)	AV332	Microprocessor and Microcontroller Lab	Core	2
27	B.Tech.: Electronics and Communication Engineering(Avionics)	AV333	RF and Microwave Communication Lab	Core	1
28	B.Tech.: Electronics and Communication Engineering(Avionics)	AV333	RF and Microwave Communication Lab	Core	1
28	B.Tech.: Electronics and Communication Engineering(Avionics)	AVC881	Modelling and Control of Robotic Systems	Audited	3
29	B.Tech.: Electronics and Communication Engineering(Avionics)	AV321	Computer Networks	Core	3
29	B.Tech.: Electronics and Communication Engineering(Avionics)	AV321	Computer Networks	Core	3
30	B.Tech.: Electronics and Communication Engineering(Avionics)	AV322	Power Electronics	Core	3
30	B.Tech.: Electronics and Communication Engineering(Avionics)	AV322	Power Electronics	Core	3

31	B.Tech.: Electronics and Communication Engineering(Avionics)	AV323	VLSI Technology	Core	3	
31	B.Tech.: Electronics and Communication Engineering(Avionics)	AV323	VLSI Technology	Core	3	
32	B.Tech.: Electronics and Communication Engineering(Avionics)	AV324	Communication Systems II	Core	3	
32	B.Tech.: Electronics and Communication Engineering(Avionics)	AV324	Communication Systems II	Core	3	
33	B.Tech.: Electronics and Communication Engineering(Avionics)	AV461	Advanced Control Theory	Elective	3	
33	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD624	Computer Vision	Elective	3	
34	B.Tech.: Electronics and Communication Engineering(Avionics)	AV489	Machine Learning for Signal Processing	Elective	3	
34	B.Tech.: Electronics and Communication Engineering(Avionics)	AVD871	Applied Markov Decision Process and Reinforcement Learning	Elective	3	
35	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM863	RF Integrated Circuits	Elective	3	
35	B.Tech.: Electronics and Communication Engineering(Avionics)	AVM863	RF Integrated Circuits	Elective	3	
36	B.Tech.: Electronics and Communication Engineering(Avionics)	AV341	Computer Networks Lab	Core	1	
36	B.Tech.: Electronics and Communication Engineering(Avionics)	AV341	Computer Networks Lab	Core	1	
37	B.Tech.: Electronics and Communication Engineering(Avionics)	AV342	Power Electronics Lab	Core	1	
37	B.Tech.: Electronics and Communication Engineering(Avionics)	AV342	Power Electronics Lab	Core	1	
38	B.Tech.: Electronics and Communication Engineering(Avionics)	AV343	Communication System Lab	Core	1	

38	B.Tech.: Electronics and Communication Engineering(Avionics)	AV343	Communication System Lab	Core	1	
39	B.Tech.: Electronics and Communication Engineering(Avionics)	AV211	Analog Electronic Circuits	Core	3	
39	B.Tech.: Electronics and Communication Engineering(Avionics)	AV211	Analog Electronic Circuits	Core	3	
40	B.Tech.: Electronics and Communication Engineering(Avionics)	AV212	Semi Conductor Devices	Core	3	
40	B.Tech.: Electronics and Communication Engineering(Avionics)	AV212	Semi Conductor Devices	Core	3	
41	B.Tech.: Electronics and Communication Engineering(Avionics)	AV213	Network Analysis	Core	3	
41	B.Tech.: Electronics and Communication Engineering(Avionics)	AV213	Network Analysis	Core	3	
42	B.Tech.: Electronics and Communication Engineering(Avionics)	AV214	Electromagnetic and Wave Propagation	Core	4	
42	B.Tech.: Electronics and Communication Engineering(Avionics)	AV214	Electromagnetic and Wave Propagation	Core	4	
43	B.Tech.: Electronics and Communication Engineering(Avionics)	AV231	Analog Electronic Circuit Lab	Core	1	
43	B.Tech.: Electronics and Communication Engineering(Avionics)	AV231	Analog Electronic Circuit Lab	Core	1	
44	B.Tech.: Electronics and Communication Engineering(Avionics)	AV232	E-CAD Lab	Core	1	
44	B.Tech.: Electronics and Communication Engineering(Avionics)	AV232	E-CAD Lab	Core	1	
45	B.Tech.: Electronics and Communication Engineering(Avionics)	AV221	Digital Electronics and VLSI Design	Core	3	
45	B.Tech.: Electronics and Communication Engineering(Avionics)	AV221	Digital Electronics and VLSI Design	Core	3	

46	B.Tech.: Electronics and Communication Engineering(Avionics)	AV222	Instrumentation and Measurement	Core	3	
46	B.Tech.: Electronics and Communication Engineering(Avionics)	AV222	Instrumentation and Measurement	Core	3	
47	B.Tech.: Electronics and Communication Engineering(Avionics)	AV223	Signals and Systems	Core	4	
47	B.Tech.: Electronics and Communication Engineering(Avionics)	AV223	Signals and Systems	Core	4	
48	B.Tech.: Electronics and Communication Engineering(Avionics)	AV224	Control System	Core	3	
48	B.Tech.: Electronics and Communication Engineering(Avionics)	AV224	Control System	Core	3	
49	B.Tech.: Electronics and Communication Engineering(Avionics)	AV241	Digital Electronics and VLSI Design Lab	Core	1	
49	B.Tech.: Electronics and Communication Engineering(Avionics)	AV241	Digital Electronics and VLSI Lab	Core	1	
50	B.Tech.: Electronics and Communication Engineering(Avionics)	AV242	Instrumentation and Measurement Lab	Core	1	
50	B.Tech.: Electronics and Communication Engineering(Avionics)	AV242	Instrumentation and Measurement Lab	Core	1	
51	B.Tech.: Electronics and Communication Engineering(Avionics)	AV243	Control System Lab	Core	1	
51	B.Tech.: Electronics and Communication Engineering(Avionics)	AV243	Control System Lab	Core	1	
52	B.Tech.: Electronics and Communication Engineering(Avionics)	AV111	Basic Electrical Engineering	Core	3	
52	B.Tech.: Electronics and Communication Engineering(Avionics)	AV111	Basic Electrical Engineering	Core	3	
53	B.Tech.: Electronics and Communication Engineering(Avionics)	AV121	Basic Electronics Engineering	Core	3	

53	B.Tech.: Electronics and Communication Engineering(Avionics)	AV121	Basic Electronics Engineering	Core	3	
54	B.Tech.: Electronics and Communication Engineering(Avionics)	AV141	Basic Electrical and Electronics Engineering Lab	Core	1	
54	B.Tech.: Electronics and Communication Engineering(Avionics)	AV141	Basic Electrical and Electronics Engineering Lab	Core	1	
55	Dual Degree: Astronomy & Astrophysics	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
55	Dual Degree: Optical Engineering	AV490	Deep Learning for Computational Data Science	Elective	3	
56	Dual Degree: Engineering Physics	AV316	Digital Signal Processing	Core	3	
56	Dual Degree: Solid State Physics	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
57	Dual Degree: Engineering Physics	AV317	Instrumentation and Measurement	Core	3	
57	Dual Degree: Engineering Physics	AV316	Digital Signal Processing	Core	3	
58	Dual Degree: Engineering Physics	AV336	Digital Signal Processing Lab	Core	1	
58	Dual Degree: Engineering Physics	AV317	Instrumentation and Measurement	Core	3	
59	Dual Degree: Engineering Physics	AV337	Instrumentation and Measurement Lab	Core	1	
59	Dual Degree: Engineering Physics	AV336	Digital Signal Processing Lab	Core	1	
60	Dual Degree: Engineering Physics	AV489	Machine Learning for Signal Processing	Institute Elective	3	
60	Dual Degree: Engineering Physics	AV337	Instrumentation and Measurement Lab	Core	1	
61	Dual Degree: Engineering Physics	AV215	Signal and Systems	Core	4	
61	Dual Degree: Engineering Physics	AV211	Analog Electronic Circuits	Core	3	

62	Dual Degree: Engineering Physics	AV225	Analog and Digital Circuits	Core	3
62	Dual Degree: Engineering Physics	AV222	Instrumentation and Measurement	Core	3
63	Dual Degree: Engineering Physics	AV111	Basic Electrical Engineering	Core	3
63	Dual Degree: Engineering Physics	AV225	Signals and Systems	Core	3
64	Dual Degree: Engineering Physics	AV121	Basic Electronics Engineering	Core	3
64	Dual Degree: Engineering Physics	AV111	Basic Electrical Engineering	Core	3
65	Dual Degree: Engineering Physics	AV141	Basic Electrical and Electronics Engineering Lab	Core	1
65	Dual Degree: Engineering Physics	AV121	Basic Electronics Engineering	Core	3
66	M.Tech.: Aerodynamics and Flight Mechanics	AVC623	Robust Control Systems	Elective	3
66	Dual Degree: Engineering Physics	AV141	Basic Electrical and Electronics Engineering Lab	Core	1
67	M.Tech.: RF and Microwave Engineering	AVR852	Project Work Phase - I	Core	15
67	M.Tech.: RF and Microwave Engineering	AVR852	Project Work Phase - I	Core	15
68	M.Tech.: RF and Microwave Engineering	AVR854	Seminar - III	Core	2
68	M.Tech.: RF and Microwave Engineering	AVR854	Seminar - III	Core	2
69	M.Tech.: RF and Microwave Engineering	AVR853	Project Work Phase - II	Core	18
69	M.Tech.: RF and Microwave Engineering	AVR853	Project Work Phase - II	Core	18
70	M.Tech.: RF and Microwave Engineering	AVR611	Advanced Electromagnetic Engineering	Core	3

70	M.Tech.: RF and Microwave Engineering	AVR611	Advanced Electromagnetic Engineering	Core	3	
71	M.Tech.: RF and Microwave Engineering	AVR612	Microwave Circuits and Systems	Core	3	
71	M.Tech.: RF and Microwave Engineering	AVR612	Microwave Circuits and Systems	Core	3	
72	M.Tech.: RF and Microwave Engineering	AVR613	Microwave Semiconductor Devices	Core	3	
72	M.Tech.: RF and Microwave Engineering	AVR613	Microwave Semiconductor Devices	Core	3	
73	M.Tech.: RF and Microwave Engineering	AVD611	Advanced Signal Analysis and Processing	Elective	3	
73	M.Tech.: RF and Microwave Engineering	AVD611	Advanced Signal Analysis and Processing	Elective	3	
74	M.Tech.: RF and Microwave Engineering	AVR631	Microwave Circuit Lab	Core	1	
74	M.Tech.: RF and Microwave Engineering	AVR631	Microwave Circuit Lab	Core	1	
75	M.Tech.: RF and Microwave Engineering	AVR614	Seminar I	Core	1	
75	M.Tech.: RF and Microwave Engineering	AVR614	Seminar I	Core	1	
76	M.Tech.: RF and Microwave Engineering	AVR621	Antenna Theory and Design	Core	3	
76	M.Tech.: RF and Microwave Engineering	AVR621	Antenna Theory and Design	Core	3	
77	M.Tech.: RF and Microwave Engineering	AVR622	Computational Methods for Electromagnetics	Core	3	
77	M.Tech.: RF and Microwave Engineering	AVR622	Computational Methods for Electromagnetics	Core	3	

78	M.Tech.: RF and Microwave Engineering	AVM863	RF Integrated Circuits	Elective	3	
78	M.Tech.: RF and Microwave Engineering	AVR871	Electromagnetic and Microwave Application of Metamaterials	Elective	3	
79	M.Tech.: RF and Microwave Engineering	AVR871	Electromagnetic and Microwave Application of Metamaterials	Elective	3	
79	M.Tech.: RF and Microwave Engineering	AVM863	RF Integrated Circuits	Elective	3	
80	M.Tech.: RF and Microwave Engineering	AVRD01	RF Engineering Design	Core	2	
80	M.Tech.: RF and Microwave Engineering	AVRD01	RF Engineering Design	Core	2	
81	M.Tech.: RF and Microwave Engineering	AVR641	Antenna Design Lab	Core	1	
81	M.Tech.: RF and Microwave Engineering	AVR641	Antenna Design Lab	Core	1	
82	M.Tech.: RF and Microwave Engineering	AVR851	Seminar - II	Core	2	
82	M.Tech.: RF and Microwave Engineering	AVR851	Seminar - II	Core	2	
83	M.Tech.: Digital Signal Processing	AVD644	Summer Design Project	Core	2	
83	M.Tech.: Digital Signal Processing	AVD644	Summer Design Project	Core	2	
84	M.Tech.: Digital Signal Processing	AVD852	Project Work Phase I	Core	15	
84	M.Tech.: Digital Signal Processing	AVD852	Project Work Phase I	Core	15	
85	M.Tech.: Digital Signal Processing	AVD853	Project Work Phase II	Core	18	
85	M.Tech.: Digital Signal Processing	AVD853	Project Work Phase II	Core	18	
86	M.Tech.: Digital Signal Processing	AVD611	Advanced Signal Analysis and Processing	Core	3	

86	M.Tech.: Digital Signal Processing	AVD611	Advanced Signal Analysis and Processing	Core	3	
87	M.Tech.: Digital Signal Processing	AVD612	Mathematical Methods for Signal Processing	Core	3	
87	M.Tech.: Digital Signal Processing	AVD612	Mathematical Methods for Signal Processing	Core	3	
88	M.Tech.: Digital Signal Processing	AVD613	Communication Systems I	Core	3	
88	M.Tech.: Digital Signal Processing	AVD613	Communication Systems I	Core	3	
89	M.Tech.: Digital Signal Processing	AVD614	Pattern Recognition and Machine Learning for Data Processing	Elective	3	
89	M.Tech.: Digital Signal Processing	AVD614	Pattern Recognition and Machine Learning for Data Processing	Core	3	
90	M.Tech.: Digital Signal Processing	AVD632	Image and Video Processing Lab	Core	1	
90	M.Tech.: Digital Signal Processing	AVD862	Information Theory and Coding	Elective	3	
91	M.Tech.: Digital Signal Processing	AVD633	Communication Systems Lab	Core	1	
91	M.Tech.: Digital Signal Processing	AV490	Deep Learning for Computational Data Science	Institute Elective	3	
92	M.Tech.: Digital Signal Processing	AVD621	Statistical Signal Processing	Core	3	
92	M.Tech.: Digital Signal Processing	AVD632	Digital Image Processing Lab	Core	1	
93	M.Tech.: Digital Signal Processing	AVD622	DSP System Design	Core	3	
93	M.Tech.: Digital Signal Processing	AVD633	Communication Systems Lab	Core	1	
94	M.Tech.: Digital Signal Processing	AVD623	Communication Systems - II	Core	3	
94	M.Tech.: Digital Signal Processing	AVD621	Statistical Signal Processing	Core	3	
95	M.Tech.: Digital Signal Processing	AVD624	Computer Vision	Core	3	

95	M.Tech.: Digital Signal Processing	AVD622	DSP System Design	Core	3	
96	M.Tech.: Digital Signal Processing	AVD871	Applied Markov Decision Processes and Reinforcement Learning	Elective	3	
96	M.Tech.: Digital Signal Processing	AVD623	Communication Systems - II	Core	3	
97	M.Tech.: Digital Signal Processing	AVD872	Internet of Things	Elective	3	
97	M.Tech.: Digital Signal Processing	AVD624	Computer Vision	Core	3	
98	M.Tech.: Digital Signal Processing	AVD641	DSP System Design Lab	Core	1	
98	M.Tech.: Digital Signal Processing	AVD871	Applied Markov Decision Processes and Reinforcement Learning	Elective	3	
99	M.Tech.: Digital Signal Processing	AVD642	Deep Learning for Visual Computing Lab	Core	1	
99	M.Tech.: Digital Signal Processing	AVD872	Internet of Things	Elective	3	
100	M.Tech.: Digital Signal Processing	AVD643	Innovative Design Project	Core	1	
100	M.Tech.: Digital Signal Processing	AVD641	DSP System Design Lab	Core	1	
101	M.Tech.: VLSI and Microsystems	AVM851	Summer Design Project	Core	2	
101	M.Tech.: Digital Signal Processing	AVD880	Multirate DSP	Elective	3	
102	M.Tech.: VLSI and Microsystems	AVM853	Project Phase I	Core	15	
102	M.Tech.: Digital Signal Processing	AVD642	Deep Learning for Visual Computing Lab	Core	1	
103	M.Tech.: VLSI and Microsystems	AVM854	Project Phase II	Core	18	
103	M.Tech.: Digital Signal Processing	AVD	Marketing Analytics	Elective	3	
104	M.Tech.: VLSI and Microsystems	AVM611	Physics of Micro and Nanoelectronic Devices - I	Core	3	

104	M.Tech.: Digital Signal Processing	AVD643	Innovative Design Project	Core	1	
105	M.Tech.: VLSI and Microsystems	AVM612	Introduction to MEMS	Core	3	
105	M.Tech.: VLSI and Microsystems	AVM851	Summer Design Project	Core	2	
106	M.Tech.: VLSI and Microsystems	AVM613	Analog VLSI Circuits	Core	3	
106	M.Tech.: VLSI and Microsystems	AVM853	Project Phase I	Core	15	
107	M.Tech.: VLSI and Microsystems	AVM614	Digital VLSI Circuits	Core	3	
107	M.Tech.: VLSI and Microsystems	AVM854	Project Phase II	Core	18	
108	M.Tech.: VLSI and Microsystems	AVC614	Applied Linear Algebra	Elective	3	
108	M.Tech.: VLSI and Microsystems	AVM611	Physics of Micro and Nanoelectronic Devices - I	Core	3	
109	M.Tech.: VLSI and Microsystems	AVM631	VLSI Design Lab	Core	1	
109	M.Tech.: VLSI and Microsystems	AVM612	Introduction to MEMS	Core	3	
110	M.Tech.: VLSI and Microsystems	AVM621	Mixed Signal VLSI Design	Core	3	
110	M.Tech.: VLSI and Microsystems	AVM613	Analog VLSI Circuits	Core	3	
111	M.Tech.: VLSI and Microsystems	AVM622	Micro/Nano Fabrication Technology	Core	3	
111	M.Tech.: VLSI and Microsystems	AVM614	Digital VLSI Circuits	Core	3	
112	M.Tech.: VLSI and Microsystems	AVM863	RF Integrated Circuits	Elective	3	
112	M.Tech.: VLSI and Microsystems	AVD611	Advanced Signal Analysis and Processing	Elective	3	
113	M.Tech.: VLSI and Microsystems	AVM868	Compound Semiconductor Devices and Technology	Elective	3	
113	M.Tech.: VLSI and Microsystems	AVM631	VLSI Design Lab	Core	1	
114	M.Tech.: VLSI and Microsystems	AVM870	Photonic Integrated Circuits	Elective	3	

114	M.Tech.: VLSI and Microsystems	AVM621	Mixed Signal VLSI Design	Core	3	
115	M.Tech.: VLSI and Microsystems	AVM002	VLSI Physical Design	Elective	3	
115	M.Tech.: VLSI and Microsystems	AVM622	Micro/Nano Fabrication Technology	Core	3	
116	M.Tech.: VLSI and Microsystems	AVM641	MEMS Lab	Core	1	
116	M.Tech.: VLSI and Microsystems	AVM863	RF Integrated Circuits	Elective	3	
117	M.Tech.: VLSI and Microsystems	AVM642	Microelectronics Lab	Core	1	
117	M.Tech.: VLSI and Microsystems	AVM870	Photonic Integrated Circuits	Elective	3	
118	M.Tech.: VLSI and Microsystems	AVM643	Engineering Project Design and Seminar	Core	2	
118	M.Tech.: VLSI and Microsystems	AVM641	MEMS Lab	Core	1	
119	M.Tech.: Control Systems	AVC854	Internship Seminar	Core	3	
119	M.Tech.: VLSI and Microsystems	AVM642	Microelectronics Lab	Core	1	
120	M.Tech.: Control Systems	AVC855	Project - Phase I	Core	12	
120	M.Tech.: VLSI and Microsystems	AVM643	Engineering Project Design and Seminar	Core	2	
121	M.Tech.: Control Systems	AVC856	Project - Phase II	Core	20	
121	M.Tech.: Control Systems	AVC854	Internship Seminar	Core	3	
122	M.Tech.: Control Systems	AVC611	Linear Systems Theory	Core	3	
122	M.Tech.: Control Systems	AVC855	Project - Phase I	Core	12	
123	M.Tech.: Control Systems	AVC612	Nonlinear Dynamical Systems	Core	2	
123	M.Tech.: Control Systems	AVC856	Project - Phase II	Core	20	
124	M.Tech.: Control Systems	AVC613	Control Systems Design	Core	3	
124	M.Tech.: Control Systems	AVC611	Linear Systems Theory	Core	3	

| 125 | M.Tech.: Control Systems | AVC614 | Applied Linear Algebra | Core | 3 | |
| 125 | M.Tech.: Control Systems | AVC612 | Nonlinear Dynamical Systems | Core | 2 | |

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	yes		

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. Online software demonstrations were used to reinforce the theoretical concepts taught in class.		
2	Is any e-learning modules developed?	Yes Courses were developed on Moodle platform. Online/recorded lectures were also given.		
3	Student evaluation procedure			

	Criteria	Response	Comments	Suggestions
	Course evaluation			
	Project evaluation			

| 4 | Evaluation components | | | |

	Criteria	Response	Comments	Suggestions
	Theory	Continuous assesment and end semester exam		

	Lab	Continuous assesment and end semester exam 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 Others - Includes assignments, class tests, term projects, technical report submission, etc.		
	Lab	Class exercise evaluation & End Semester Examination Lab exercise evaluation, Attendance, Daily performance viva, report evaluation, mini projects		
6	Is there any remedial coaching to support weak performers?	Yes	Remedial tutorial sessions, special classes, and problem/ recitation sessions were conducted for some theory courses. For some lab courses – makeup sessions as well as instructor led discussions were arranged for students having difficulty completing the labs on 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 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	45		
3	No. of books published	4		
4	No. of book chapters published	4		
5	No. of invited talks/ conferences/ workshops attended	51		
6	No. of research projects funded by IIST			
7	No. of research projects funded through ASRG/IIST-ISRO/DoS	10		.
8	No. of externally funded research projects like CSIR, DST, DRDO etc.	10		
9	No. of patents published/ awarded	0		
10	No. of patents filed	1		
11	No. of faculty/student awards received	15		
12	No. of conferences/Workshops/ seminars/Colloquium Organized	1		

13	No. of conference paper published	51			
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				

VIII Details of student co-curricular activities

Criteria	Response	Comments	Suggestions
Whether students are involved in extra curricular & co-curricular activities?	Yes		
Whether students are doing internship abroad?	No		
Whether students are doing internship at national academic institutes / universities?	No		

Whether students are doing internship at ISRO/ Industries/ R&D institutes?	Yes Externally sponsored	1. Chunduri Sai Abhishek -M/s Robert Bosch 2. Yugal Joshi - M/s Robert Bosch 3. Rinu Preethi B- Control System -M/s TC 4. Ankit Singh -VLSI and Microsystems- M/s Ignitarium Solutions 5. Thota Vamsi Krishna- Digital Signal Processing- M/s Continental Automotive 6. Shubham Wankhade- Digital Signal Processing- M/s Continental Automotive 7. Akshay Shaji - VLSI and Microsystems- M/s INTEL 8. Ankit Singh -VLSI and Microsystems- M/s INTEL 9. Rinu Preethi -Control System- M/s INTEL 10. Sai Divya- RF and Microwave Engineering- M/s INTEL 11. Harshit Shukla -VLSI and Microsystems -M/s INTEL 12. Sarath KR -VLSI and Microsystems- M/s INTEL 13. G Rajashree Sawale -VLSI and Microsystems -M/s GalaxEye 14. Anbu Mathi R- RF & Microwave Engineering -M/s GalaxEye 15. G Rajashree Sawale- VLSI and Microsystems -M/s C-DAC 16. Sai Lakshmi- Control System- M/s Skyroot Aerospace 17. Ranjeet Shakya -Control System -M/s Aadyah Aerospace 18. Bhukya Naveen- RF & Microwave Engineering -M/s TCS	

Whether the department conducts outreach programs?	Yes Talk by Dr. Palash Kumar Basu, Associate Professor, Department of Avionics on Design and Development of Low Power, Low Cost, High-Performance Gas Sensor Array for Exhale Breath analyzer: Present and Future 2. As part of the 15th Foundation Day Celebrations, IIST conducted the IIST@Schools programme in an online mode for 250 students of an NGO in Kanyakumari.Talks were delivered by Dr. Sudharshan Kaarthick, Associate Professor, Department of Avionics, IIST on Electric Vehicles
Whether department has alumni activities?	No Institute-level alumini cell is present

IX Details of placement/ higher studies of students

Criteria	UG	PG	PhD	Comments	Suggestions
No. of students placed	53	82	0		
No. of students opted for higher studies	0	24	0		
No. of students cleared GATE/ SLET/ NET/ CSIR/ UGC/ Others etc.	2	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	0		

7	Is there any lab with potential for centre of excellence?	NEMS Nano & Optoelectronics Systems (NEMO) Computer Vision and Virtual Reality Center of Excellence(CVVR-CoE)		
8	Is there any labs sponsored by external agency?	no		
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, ramp, and Separate restroom for differently abled.		
12	Is there any Department library?	No, Institute houses an excellent library which has very good collection of books and resources related to Electrical, Electronics and Computer Science.		

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)?	No
2.	Do the courses offered in each programme by the department provide the Course Objectives and Course Outcomes (COs) written in clear terms?	No
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	Talk by Dr. Palash Kumar Basu, Associate Professor, Department of Avionics on Design and Development of Low Power, Low Cost, High-Performance Gas Sensor Array for Exhale Breath analyzer: Present and Future 2. As part of the 15th Foundation Day Celeb
8.	List Faculty Development Programme conducted (any programme aiming at updating the knowledge of faculty of the department).	One-day virtual workshop on Intelligent Reflecting Surfaces: Fundamentals and Applications, MATLAB Workshop on DSP System Design (Virtual mode), IEEE Space Antenna Workshop (ISAW2021) (Virtual mode)
9.	Does students take projects involving Field work/Survey. If yes, give the list.	Yes. some 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 NTU and IIST, University of Colorado, Boulder and Caltech, USA and University of Surrey, UK, LAAS-CNRS, France are operational during this year.

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.	67 Lakhs
14.	The suggestions to improve the efficiency and effectiveness of the IIST system.	

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

The department continues to offer undergraduate (B.Tech.), postgraduate (M.Tech.), and Ph.D. programs in Avionics and related fields. The sanctioned student intake of 66 for B. Tech and 50 for M.Tech. per year, indicating a healthy program size. There are also Ph.D. programs with over 50 scholars currently enrolled. Some of the highlighting factors which can be viewed as departmental strengths are as follows,

1. Faculty members from the department have been contributing actively to Advanced Space Research Group (ASRG) activities. Five projects have been approved till date under ASRG scheme . ASRG is made exclusively for IIST scientists to contribute to the cutting edge research that is being pursued for different ISRO centers across all over India.

2. Department has initiated MoUs with various Industries / R&D organizations including TU-Delft, University of California San Diego, University of California Irvine, Institution of Electrical and Electronics Engineers, New Jersey, and Iowa State University, Ames, IA, USA.

3. Faculty members from the Department hold various externally funded projects, funded by DST-SERB, DBT, DRDO, Indian Oil Ltd etc.

4. Multiple faculties from the department are actively involved in institute involved in

Small- spacecraft Systems and PAyload Centre (SSPACE) activities at IIST, with core focus on On-board Computer System, Communication System, Electrical Power System, Attitude Determination & Control System and other Payload activities. Faculty from department is also involved in IIST Ground Station Development.

5. The department of Avionics is looking to support different incubators and modern innovation one this happened in this year in the form of supporting Vashishtha Research Pvt. Ltd. Company in incubation and innovation.

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

The potential weaknesses of the department are of more general in nature. Some of these weaknesses are mentioned as follows:

1. The department's webpage doesn't provide detailed information on ongoing research projects, faculty publications, or specific placement related. This lack of transparency could be a weakness. Although some of the things have been updated. But this needs to be improved.

2. There's no mention of specializations within Avionics offered at the undergraduate or postgraduate level specially their seat matrix. The focus might be on a broad curriculum rather than specializations in emerging areas.

3. Currently the faculty size is limited. More faculties should be recruited in the cutting edge research areas for more visibility and to reduce the teaching load.

4. Department has not hosted any formal meet up with its B. Tech and M. Tech alumni.

5. Department should conduct one research symposium annually to showcase their research.

XV. Challenges (maximum 150 words).

1. Keeping pace with rapid technological advancements: The field of Avionics is constantly evolving with new technologies and concepts emerging frequently. This requires the department to continuously update its curriculum and ensure faculty and students are familiar with the latest developments.

2. Balancing theory and practical application: Avionics systems are complex and require a strong foundation in theoretical knowledge as well as practical skills. The department needs to strike a balance between these two aspects in its curriculum.

3. Developing industry-ready graduates: Avionics engineers are expected to be proficient in various areas. The department needs to equip students with the necessary skills and knowledge to be successful in the aerospace industry.

4. Funding for research: Research in Avionics can be expensive due to the requirement of sophisticated equipment and facilities. The department might face challenges in securing sufficient funding for its research endeavors.

5. Department has specific challenges in creating collaboration with external industrial agencies and also with the different ISRO labs. The creation of MOUs and consultancy guidelines to be framed for further improvement.

6. In 2020 department hits with covid, so like other institutes it faces initially many challenges to migrate its entire offline academics to online mode. But gradually institute has resolved these challenges with necessary supports from faculties and administration.

XV. Opportunities (maximum 150 words).

The Indian Institute of Space Science and Technology (IIST) has a Department of Avionics that focuses on training and research related to the electronics systems used in aerospace applications. IIST's Department of Avionics likely engages in cutting-edge research to develop and advance avionics technologies. Opportunities may include research projects funded by government agencies like ISRO (Indian Space Research Organisation) or collaborations with industry partners. Given ISRO's focus on space missions, there are opportunities to work on spacecraft avionics systems. This includes designing, developing, and testing electronics for satellite communication, navigation, and scientific instruments. ISRO's launch vehicles require sophisticated avionics systems for guidance, navigation, and control. Opportunities exist to work on the electronics and control systems for launch vehicles. Avionics systems involve complex embedded systems and signal processing techniques. Research and development opportunities may focus on optimizing these systems for reliability and performance. Avionics engineers at IIST may work on navigation systems such as GPS, inertial navigation, and celestial navigation, as well as control systems for aerospace vehicles. It plays a crucial role in remote sensing satellites and Earth observation missions. Opportunities may involve developing electronics for imaging sensors, data transmission systems, and data processing. IIST often collaborates closely with ISRO and industry partners. This collaboration provides opportunities for students and researchers to work on real-world projects and gain practical experience. IIST offers undergraduate and postgraduate programs in avionics. Opportunities
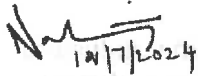
may exist for faculty positions or as research assistants to contribute to teaching and mentoring future avionics engineers. Students at IIST have opportunities to participate in internships and industry projects, gaining practical experience in avionics technology and applications. Also, they get involved in doing research in global top ranked institutes. With a strong foundation in avionics technology, graduates from IIST's Department of Avionics may explore opportunities to start their own companies or join stratups focusing on aerospace electronics and systems.

Final Recommendations:
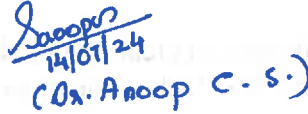
The academic audit of the Department of Avionics highlighted strengths in robust curriculum frameworks and dedicated faculty members. The review of curriculum design, learning outcomes, and alignment with research standards showcased the department's commitment to academic excellence and relevance in the field of avionics. Moving forward, a key recommendation is to enhance faculty and staff capacity to effectively meet teaching, research, and technology transfer requirements. This strategic enhancement will further strengthen the department's ability to innovate, educate, and contribute meaningfully to the aerospace industry. Overall, the department is poised for continued success and advancement in its academic programs and research endeavors.

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:
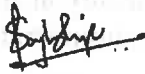
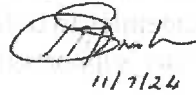**Date of meeting: 11th July, 2024**

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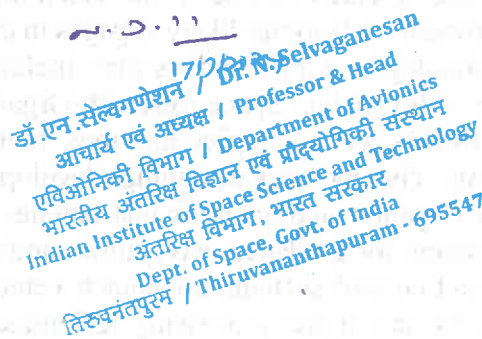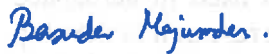Professor, Department of Mathematics, IIST

(Dr. Anoop C. S.)

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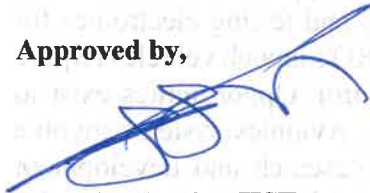Department of Electrical Engineering
IIT Palakkad

Dr. Sivakumaran N.
Professor,
NIT Trichy

Signature of Committee members

Basudev Majumder.

17/7/24 Dr. N. Selvaganesan

डॉ.एन.सेल्वगणेशन / Professor & Head
आचार्य एवं अध्यक्ष / Professor & Head
एविओनिकी विभाग / Department of Avionics
भारतीय अंतरिक्ष विज्ञान एवं प्रौद्योगिकी संस्थान
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Approved by,

Dean Academics, IIST

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