Evaluative Report of the Department
(2011 – 2015)

1. Name of the Department : Department of Aerospace Engineering

2. Year of Establishment : 2009-10

3. Is the Department part of a school / Faculty of the university?
   : Yes – Department of Aerospace Engineering is a Department in School of Mechanical Sciences.

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters, Integrated Ph.D., D.Sc., D.Litt., etc.)

Name of the Programme	Specialization	Duration Yrs.	Fulltime / part-time
B.Tech.	Aerospace	4	Fulltime
M.Tech.	Aerospace	2	Fulltime
M.Phil.	Nil		
Ph.D.	Aerospace	2	Full time
		3	Part time

5. Interdisciplinary programmes and departments involved.

   Free Elective offered (Interdisciplinary course) -.Basics of Aerospace Engineering (10AE202).

6. Courses in collaboration with other Universities, Industries, foreign institutions:

Collaborations	Universities/ Industries/ foreign institutions	Project
Shock Tube/Tunnel	Shock wave society of India, IISC Bangalore and Aeronautical Research Development Board(ARDB-DRDO)	Sponsored project on Ignition delay studies PhD scholar

7. Details of programmes discontinued, if any with reasons: Nil

8. Examination system: Semester System/CBCS system

9. Participation of the department in the courses offered by other departments

Name of the Programme	Department	Subject
B.Tech	Pre – Engineering Programme	Basic Mechanical Engineering

10. Number of teaching posts sanctioned, filled and actual (Professors / Associate Professors / Assistant Professors / others)

Designation	Sanctioned	Filled / actual
Professor	2	3
Associate Professor	4	0
Assistant Professors	9	11
Others	-	1

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance.

S.No.	Name	Designation	Qualification	Specialization	No. of years of experience	No. of Ph.D. / M.Phil. students guided for the last 4 years
1.	Dr. Pradeep Kumar	Professor	Ph.D	Aerodynamics	43	2
2.	Dr. T. Michael N. Kumar	Professor	Ph.D	Aerospace Engg.	40	4
3.	Dr. R K Sharma	Professor	Ph.D.	Space dynamics	42	2
4.	Mr. P. Jeevanandam (Relieved in 2013)	Associate Professor	MS	Aeronautical Engineering	16	-
5.	Mr. Anu Jacob Paul	Assistant Professor	M.S	Aeronautical Engineering	11	-
6.	Mr. Jims John Wesley	Assistant Professor	M.E,PhD	Thermal Engineering	11	-
7.	Mr. R. Renjith Singh	Assistant professor	M.E	Thermal Engineering	10	-
8.	Mr. Kalakanda Alfred Sunny	Assistant professor	M. Tech	Design Engg.	5	-
9.	Mr. Aldin Justin	Assistant professor	M. Tech	Design Engg.	5	-
10.	Mr. Jeeven Joseph (Relieved in 2014)	Assistant professor	M.E	Aeronautical Engg.	2	-
11.	Mr. Prashant Kumar	Assistant Professor	M.E	Aeronautical Engg.	5	-
12.	Ms. S. R. Musica	Assistant Professor	M.E	Avionics	3	-
13.	Mr. M. Gopalaswamy	Assistant Professor	M.E	Aeronautical Engg.	2	-
14.	Mrs. S. Parameswari	Assistant professor	M.E	Aeronautical Engg.	2	-
15.	Mrs. Gayathri	Assistant professor	M.E	Aeronautical Engg.	3	-
16.	Mr.Daniel Antony	Assistant professor		Aeronautical Engg.	3	-

12. List of Senior Visiting Fellows, adjunct faculty, emeritus professor

Name	Designation	Qualification	No of years of experience	Date of Joining
Mr. A.N Subash	Consultant	M.E (Aero)	42	01/07/2009

Visiting Fellows

S.No.	Name of Professor	University/Organization
1	Prof. Pini Gurfil	Technion Isreal Institute of Technology
2	Dr.B.C.Pillai	ISRO

Pini Gurfil- He is currently an Associate Professor at the Technion. Conducting research in astrodynamics, distributed space systems, trajectory optimization, vision-aided navigation and tracking, and multi-agent systems. Associate Editor of the Journal of Guidance, Control, and Dynamics, an Associte Editor of Celestial Mechanics and Dynamical Astronomy.

B.C.Pillai- Worked in VSSC-Trivandrum more than four decades as various capacities and and superannuated as group director and contributed to Indian space mission projects in the area of propulsion.

13. Percentage of classes taken by temporary faculty – programme-wise information: Nil

14. Programme-wise Student-Teacher Ratio

Name of the Programme	No. of faculty	No. of students	Student-teacher ratio
B.Tech.	13	201	15.46
M.Tech.	1	14	14:1
M.Phil.	NA		
Ph.D.	3	3	-

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

No. of	Sanctioned	Filled
Technical Staff	2	2
Administrative staff	1	1

16. Research thrust areas as recognized by major funding agencies

S.No.	Funding Agencies	Thrust Areas of Research
1	ISRO	Aerodynamics and fluid controls, Flight and space dynamics
2	DRDO	Aircraft Structure and Strength of Aircraft materials, Aircraft Propulsion
3	DST	Space dynamics

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

Name of the faculty with designation	Title of the Project	Funding agency	Grants received in Rs.	Communication reference No. with date
Dr. Pradeep Kumar/ Professor & Head, Aerospace	Thermal Response of Sandwich Honeycomb panels under Transient Heating condition (Theoretical Analysis	ISRO	Rs 7.16 lakhs	Dept. of Space ISRO (RESPOND) (No.B.19012/28/2012-II dt. 15/03/2012)
Dr. Pradeep Kumar/ Professor & Head, Aerospace	Heat Flux Estimation using Transient Temperature Measurement	ISRO	Rs 4.63 lakhs	Department of Space ISRO (Respond) (No.B.19012/30/2012-II dt. 15/03/2012)
Dr. R. K. Sharma, Professor	Re-entry Time Prediction of Space Objects from High Eccentricity Orbits	SERB	Rs.11.82 lakhs	23.04.2014 SR/S4/MS:801/12
Dr. R. K. Sharma, Professor	Mars Interplanetary Trajectory Design via Lagrangian points in the Restricted Three-Body Problem	RESPON D-ISRO	Rs.5.28 lakhs	18.03.2015 ISRO/RES/3/673/2014-15
Mr. Aldin Justin, Asst.Professor	Ignition delay studies of isosene using shock tube	AR&DB, DRDO	Rs.9.26 lakhs	ARDB/01/1041784/M/ I dated 7.9.2015.

18. Inter-institutional collaborative projects and associated grants received: Nil

19. Departmental projects funded by DST-FIST, UGC-SAP/CAS, DBT, ICSSR, AICTE, **SERB, ISRO** etc. total grants received: **38.15 Lakhs**

20. Research and Laboratory facility/Centre Status

Facilities	Item
Wind tunnels for flow simulation	• Subsonic wind tunnel • Open jet facility • Water Tunnel • Supersonic wind tunnel • Free jet facility • Supersonic wind tunnel • Free jet facility
Combustion Facilities	• Shock tube • Propellant Ignition
Heat transfer tunnel	• Panel level TPS testing • Kinetic heating simulation facility • Heat Transfer Tunnel
Propulsion	• Static Test Facility • High attitude test facility

	• Injector calibration
Material Testing and Computational Engineering	• CFD Laboratory Facility • Structural Engineering Facility • Composite materials

National recognition:

S.No.	Participating Industry	Thrust Area
1	AR&DB, DRDO	Shock tube

International recognition

Faculty/Research Scholar	Visited University/Organization	Purpose
Dr.R.K.Sharma Professor	Technion Isreal Institute of Technology(TIIT)	Delivered talk on Orbital dynamics
Mr.S.Harish Kumar (JRF)	Technion Isreal Institute of Technology(TIIT)	To work on spacecraft orbit prediction (prof.Pini Gurfil)

- From the department of Aerospace Engineering Mr.S.Harish Kumar (JRF) visited to Technion University for two months to work with prof.Pini Gurfil

21. Special research laboratories sponsored by / created by industry or corporate bodies:

22. Publications

Number of papers published in peer reviewed journals (national / international) is given below: (For details refer **Appendix K-1**)

	2011	2012	2013	2014	2015
No. of papers published in peer reviewed journals (national/ international)	0/2	0/4	0/1	0/6	0/4
Monographs	Nil	Nil	Nil	Nil	Nil
Chapters in Books	Nil	Nil	Nil	Nil	Nil
Edited books/Books with ISBN	Nil	Nil	Nil	Nil	Nil
No. of papers listed in Scopus	0	4	0	3	2
Citation index – range / average :	1/1	1-12/6.5	0	4/4	0
SNIP	0	0.93	0	0.74	0.522
SJR	0	0.638	0	0.55	0.405
Impact Factor – range / average:	0-0.79/0.79	0.46-2.263/1.81	0	0.08-2.26/0.914	0.07-2.18/0.564
h-index	1	1	0	1	0

23. Details of patents and income generated: Nil

24. Areas of consultancy and income generated: Nil

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad:

Name of the faculty with designation	Name of the company / institution visited	Period of visit		Purpose
		From	To	
Ms. Musica.S.R	National Instruments	October 3, 2012	October 5, 2012.	Training programme on 'Labview training-Core 1 & 2'
Mr. Aldin Justin	National Instruments	October 3, 2012	October 5, 2012.	Training programme on 'Labview training-Core 1 & 2'
Dr.R.K.Sharma	Paris Observatory, (foremost astronomical observatory of France)	9th June 2015	-	Guest Lecture
Dr.R.K.Sharma	**TECHNION** International Israel Institute of Technology	1st Nov-2014	7th Nov-2014	To Meet the experts

26. Faculty serving in
a)National Committees b) International Committees c) Editorial Boards

S.No.	Faculty Name	Board/Committees	Responsibility	Year
1	Dr.R.K.Sharma	Team Indus	Honorary committee member	2014
2	Dr.R.K.Sharma	Editorial board	International Scholarly Research for Aerospace Engg.	-
3	Dr.R.K.Sharma	Mathematical Reviewer, USA	Reviewer	1977 to till date

27. Faculty recharging strategies (UGC, ASC, Refresher / Orientation programmes, workshops, training programmes and similar programmes): Please refer **Appendix K-2**

Programmes	2011-2012	2012-2013	2013-2014	2014-2015
Number of orientation programmes, workshops, training programmes attended	4	6	5	9
Number of Faculty Attended	11	18	4	8

28. Student projects

- Percentage of students who have done in-house projects excluding inter-departmental projects

Academic Year	Number of students	Percentage
2011-2012	-	-
2012-2013	57	100%
2013-2014	55	85%
2014-2015	114	95%

- Percentage of students doing projects in collaboration with other universities / industry / institute

Academic Year	Number of students	Percentage
2011-2012	-	-
2012-2013	Nil	Nil
2013-2014	9	15%
2014-2015	6	5%

29. Awards / recognitions received at the national and international level by faculty/students

Faculty: National/international level

Name of the faculty with designation	Details of awards received	Awarding authority	Year
Mr. A. N. Subash, Consultant	Eminent Aerodynamicist. Lifetime contributions to the growth of aerodynamics and the design of aerospace vehicles in the country, particularly in the fields of experimental aerodynamics	SAROD	2011

Faculty: University level

Name of the faculty with designation	Details of awards received	Awarding authority	Year
Mr. Anu Jacob Paul, Assistant Professor	Best Teacher Award	KITS	2011
Dr. R.K. Sharma Professor	Best Research Paper Award	KITS	2012
Dr. R.K. Sharma Professor	Best researcher Award	KITS	2013
Dr. R.K. Sharma Professor	Achiever Award	KITS	2014

Students: Please refer **Appendix K-3**

30. Seminars / conferences / workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

National: Name of the Programme	Name of the Board / Details	Event held	Duration
Experimental Aerodynamics tools	Mr. S. Pandian Group Director, VSSC, Trivendram	KU	One day Seminar – 7 Jan 2012
Aero modeling	Mr. Dinesh, Avian Aerospace, Chennai	KU	7th and 8th September 2012
Symposium Machyard '12	---	KU	14th & 15th September 2012
Seminar	Dr. RanganathNavalgund,	KU	26 Feb 2014

	ISRO		
Workshop	Workshop on RC- Plane Design , fabrication and flying	KU	13th and 14th August 2014
Workshop	CANSAT SATELLITE DESIGN	KU	11th and 12th September 2014
National level technical symposium	MACHYARD '14	KU	18th and 19th September 2014
Workshop	Two Days Workshop On Micro Quadcopter	KU	27th and 28th January 2015

31. Code of ethics for research followed by the departments.

Department of Aerospace Engineering follows KITS norms which is as follows:

- Code of ethics as per Ph.D regulations 2011 of KITS is followed.
- In the case of research scholars who have copied a dissertation / thesis / book for Ph.D. degree his / her thesis shall be forfeited and his / her research registration shall be terminated in this university and also he / she shall be debarred to register for any other programme in KITS.
- For the abetment of above such action, the recognition of his / her supervisor shall be withdrawn for a period of 5 years and he / she shall be debarred from guiding the research scholars for any research programme in KITS till such period.
- Plagiarism check software has been used to screen the research thesis. The purpose is to inculcate the importance of plagiarism check.

32. Student profile programme-wise

Name of the programme	Number of students					
	SC	ST	BC	OC	Physically challenged	Foreign Students
	2011 -2012					
B.Tech (Aerospace Engg.)	14	7	137	76	0	2
M.Tech(Aerospace Engg)	0	0	0	0	0	0
P.hD (Aerospace Engg.)	0	0	0	0	0	0
	2012-2013					
B.Tech (Aerospace Engg.)	14	9	162	122	0	3
M.Tech(Aerospace Engg)	0	0	0	0	0	0
P.hD (Aerospace Engg.)	0	0	0	0	0	0
	2013-2014					
B.Tech (Aerospace Engg.)	128	8	155	141	0	3
M.Tech(Aerospace Engg)	0	0	0	0	0	0
P.hD (Aerospace Engg.)	0	0	0	0	0	0
	2014-2015					

B.Tech (Aerospace Engg.)	15	10	142	156	0	5
M.Tech(Aerospace Engg)	0	0	7	1	0	0
P.hD (Aerospace Engg.)	0	0	1	2	0	0

33. Diversity of Students (PG):

Year	Name of the Programme (refer to Q. No.4)	% of students from the same University	% of students from other Universities within the State	% of students from Universities outside the State	% of students from other Countries
2014-2015	M.Tech-Aerospace Engg	62.5 %	Nil	37.5 %	Nil

34. How many students have cleared all Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations?

Name of the Student	Reg. No.	Examination cleared	Year of passing
Keshav Sivakumar	09FL015	GATE 2013	2013
Tumpiri Malena	09FL040	GATE 2013	2013
Prince J	UR10AE056	IELTS	2013
Prince J	UR10AE056	TOFEL	2013
Chris Samuel Pathicheril	UR10AE061	TOFEL	2013
AnirudhThotaVenkata	UR10AE024	GATE 2014	2014
Robin James	UR10AE023	GATE 2014	2014
Cyril Sebastian	UR10AE004	GATE 2014	2014
Sandeep.P.S	UR10AE057	GATE 2014	2014
Murtaza Mohammed	UR10AE051	GATE 2014	2014
Gayathri D	UR11AE089	GATE 2015	2015
Yogeshthawrani	UR11AE079	GATE 2015	2015

35. Student progression

Student progression	Percentage against enrolled
UG to PG	20.34%
PG to M.Phil.	Nil
PG to Ph.D.	Nil
Ph.D. to Post-Doctoral	Nil
Employed • Campus selection • Other than campus recruitment	25.42%
Entrepreneurs	Nil

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	20%
From other universities within the State	40%
From universities from other States	26.6
From universities outside the country	6.6%

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc., and D.Litt. during the assessment period: **1**

Name of Faculty	Degree	University	Year of Award of Degree
Mr.Jims John Wessley	PhD	Anna University	2015

38. Present details of departmental infrastructural facilities with regard to

a) Library
Department Library has a collection of 90 latest editions of books in the field of Aerospace Engg for the reference of staff and students.

b) Internet facilities to staff and students

Every faculty are provided with either desktop computer or laptop with internet facilities within the campus premises. A total of 8 computers with internet facility are available in the department.

c) Total number of class rooms : 5

d) Class rooms with ICT facility
Every faculty is provided with either desktop computer or laptop to prepare the teaching material and delivered through LCD projectors fixed in all the classes of the department.

e) Students' laboratories
The Laboratory is fully equipped to cater to the research and projects of staff and students along with latest software like CATIA, Solidworks and Fluent.
Please refer **Appendix K-4**

39. List of doctoral, post-doctoral students and Research Associates: 3

Reg.No	Name of the Student	Department	No of Scholars
RP13AE001	Prashant Kumar	Aerospace	3
RP15AE001	S.R.Musica	Aerospace	
RR14AE001	S.Harish Kumar (JRF)	Aerospace	

40. Number of post graduate students getting financial assistance from the University:

S. No.	Student Name	Reg.No.	Category	Amount (Rs.)
1	Abishek	UR12AE001	Seed money	10000
2	Abijit singh	UR12AE002	Seed money	10000
3	Vishal Kaatal	UR12AE057	Seed money	10000
4	Erica wilson	UR12AE017	Seed money	10000
5	Vepuri Christina	PR14AE1005	Seed money	10000
6	Bhushan Bhangale	PR14AE1006	Seed money	10000
7	Joshua Immanuel	PR14AE1004	Seed money	10000

41. Was any need assessment exercise undertaken before the development of new programme(s)?: Nil

42. Does the department obtain feedback from

a) Faculty on curriculum as well as teaching-learning evaluation? If yes, how does the department utilize the feedback?

Yes, Academic Audit is prepared based on the result and teaching methodologies followed by the faculty and the marks awarded is communicated to the faculty and they will be advised to improve where they lack.

b) Students on staff, curriculum and teaching-learning evaluation and how does the department utilize the feedback?
Yes, the department obtains feedback from the students during Mentor Meetings conducted every week and initiate necessary actions / corrections also an online feedback is obtained at the end of the Semester which is used to plan training for faculty and carrier development etc…

c) Alumni and employers on the programmes offered and how does the department utilize the feedback?

Yes, Feedback from the Alumni is taken and it is used to improve the quality of the syllabus and to include more industry oriented subjects so that students will get more exposure to the current trends in the industry.

43. List the distinguished alumni of the department (max. 10) Please refer **Appendix K-5**

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

Name of the Progr-amme	Period		Details of the External Expert			Title of the topic / lecture delivered	No. of Partici-pants
	From	To	Name of the external expert / guest	Desig-nation	Institution / Company		
Flight training	30-11-2012	09-12-2012	-	-	IIT Kanpur	Flight performance	29
Flight training	21-07-2013	01-08-2013	-	-	IIT Kanpur	Flight performance	30
Aero modeling	07-09-2012	08-09-2012	Mr. Dinesh	Entre-preneur	Avion Aerospace	Aero modeling	160
UAV and MAV	27th Aug-2013	-	-	-	Bannari Amman Institute of tech	Design chanllenges associated with UAV	2
Trainning	18	23-Dec-2013	-	-	Amrita University, Coimbatore	CFD Workshop	2
Workshop	14th Feb-2014		-	-	EIE-KITS	COMSOL Multi physics modeling	2
Workshop	26	27th Feb-2014	-	-	KITS	Android and web-o master	2
Project Display-Mindkraft	26	28th Feb-	-	-	KITS	Design of Ramjet Engine	2

		2014					
Project Display-Mindkraft	26	28th Feb-2014	-	-	KITS	Fabricated model of C-D nozzle	52
Project Display-Mindkraft	26	28th Feb-2014			KITS	Design of Rover	1

45. List the teaching methods adopted by the faculty for different programmes.

Innovations/ Best practices in Learning adopted by the department.

- Multimedia learning – Audio, Video, Animation
- Quiz, Brain storming sessions, group problem solving
- Expert lectures are being given as a seminar practice
- Model exhibition in department symposium
- Final year PG and UG students are asked to present their projects/research findings.
- Best project award for the department.
- Research oriented learning - To inculcate the research aptitude for each student is tagged with research scholar and faculty

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- Programme Exit survey
- Employability of students (placements)
- Feedback from students
- Class committee meeting
- Internal assessment test

47. Highlight the participation of students and faculty in extension activities.

Most of the faculties and the students of the department are actively involved in various club activities like:

- NSS
- NCC
- Nature club
- Astronomy club
- Photographic club
- YRC
- Rotaract
- Karunya Arts and Literary Association (KALA)
- Mental health awareness campaign to villages in and around Karunya nagar

For faculty details

Name of the faculty	Name of the extension activity	Year
Mr. Aldin Justin	Astronomy club	2011-2013
Lt. Musica (gazetted grade B)	NCC	2014 onwards

- Apart from academic tutoring, NCC imparts discipline, unity, leadership qualities and healthy daily life habits. Attending camps outside the state imparts exposure to external factors, experience in tackling hardships. Few III & II year cadets attended All India Girls Trekking Expedition in Himachal Pradesh in July. Every year the cadets attend interstate camps and learn effective brotherhood and to co-exist peacefully.

48. Give details of "beyond syllabus scholarly activities" of the department.

1. Aero modeling Club Activities/Workshop
2. Astronomy Club Activities
3. GATE Coaching
4. Weekly seminars by external experts
5. Yearly *'Mach Yard'* – Inter collegiate symposium;
6. Mindkraft
7. Flight training- IIT Kanpur

49. State whether the programme / department is accredited / graded by other Agencies?:

- National Assessment Accreditation Council (NAAC)

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.
    1. Innovative Student Projects with new ideas as part of curriculum
    2. Aircraft design project with innovative designs
    3. Making students a part of the research done by the faculty
    4. Seed money for the students and faculty
51. Detail five major strengths, weaknesses, opportunities and challenges (SWOC) of the department.

Strengths

1. Faculty with experience from reputed organizations
2. Good Infrastructure
3. Research Level Laboratories

Weaknesses

1. Links with aerospace industry such as Air Bus, Boeing, etc. are being initiated.
2. With more number graduating, alumni support will grow larger; presently, however, only three batches have graduated and the 'young' programme is getting established.

Opportunities

1. Students get the opportunity to couple their understanding of science and mathematics with engineering sense.
2. As Aviation industry is growing there is a need for large number of aerospace engineers.

Challenges

1. Core aviation industry placements.
2. Applications of technology in airborne and spaceborne systems
3. Preparing the students to face real engineering world.

52. Future plans of the department

Student Enrichment Plan

- The department placement and higher studies will be strengthened, more number of students will be given extra guidance for competitive exams from campus and outside sources, also guidance for higher studies, opportunities abroad will be given-opportunities at industries also will be exposed to students
- Class advisor/Mentor-students relationship will be strengthened.
- Students will be facilitated to participate and present research papers in National and International conferences/ seminars/symposia.
- Best projects award for final year students

Administration Plan

- FDP for teaching/ non-teaching staff

Research Plans

- Research club is established and will be made effective to assist the students to present research papers in conference and to publish in journals
- Conversion of the research facilities into centers of excellence
- Research publication with high IF to be enhanced

Consultancy Plans

- Form consultancy units or groups
- Train staff and students on research and consultancy skills
- Publicise areas of expertise
- Signing MOU's with industries