

**PERIYAR
MANIAMMAI**
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
Established Under Sec. 3 of UGC Act, 1956 • NAAC Accredited
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Criterion 1 – Curricular Aspects

Key Indicator	1.2	Academic Flexibility
Metric	1.2.2	Percentage of Programmes in which Choice Based Credit System (CBCS)/elective course system has been implemented (Data for the latest completed academic year)

DEPARTMENT OF AEROSPACE ENGINEERING STRUCTURE OF THE PROGRAM CLEARLY INDICATING COURSES, CREDITS/ELECTIVES

Programmes

1. B. Tech Aerospace Engineering

REGULATION – 2018 – Revision 1
SEMESTER I

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XMA101	Calculus and Linear Algebra	3	1	0	4	4
2.	XCP102	Programming for Problem Solving	3	0	4	5	7
3.	XGS103	English	2	0	2	3	4
4.	XAS104	Applied Chemistry for Engineers	3	1	2	5	6
5.	XWP105	Workshop Practices	1	0	4	3	5
TOTAL						20	26

SEMESTER II

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XMA201	Calculus, Ordinary Differential Equations and Complex Variables	3	1	0	4	4
2.	XES202	Environmental Sciences	3	0	0	0	3
3.	XBE203	Electrical and Electronics Engineering Systems	3	1	2	5	6
4.	XAP204	Applied Physics for Engineers	3	1	4	6	8
5.	XEG205	Engineering Graphics and Design	1	0	4	3	5
TOTAL						18	26

SEMESTER III

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XMA301	Transforms and Partial Differential Equations	3	1	0	4	4
2.	XAS302	Material Science and Metallurgy	3	0	0	3	3
3.	XAS303	Solid Mechanics and Fluid Mechanics	3	1	0	4	4
4.	XEM304	Engineering Mechanics	3	1	0	4	4
5.	XUM305	Entrepreneurship Development	3	0	0	3	3
6.	XAS306	Engineering Thermodynamics	2	1	0	3	4
7.	XAS307	In-Plant Training-I	0	0	0	0	0
TOTAL						21	22

SEMESTER IV

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XAS401	Aerodynamics I	3	0	2	4	5
2.	XAS402	Aircraft Structures I	3	1	0	4	4
3.	XUM403	Human Ethics, Values, Rights and Gender Equality	1	0	0	0	1
4.	XAS404	Aircraft Propulsion	3	1	2	5	6
5.	XAS405	Elements of Satellite Technology	3	0	0	3	3
6.	XASE**	Professional Elective Course I	3	0	0	3	3
TOTAL						19	22

SEMESTER V

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XAS501	Aerodynamics II	3	1	0	4	4
2.	XAS502	Aircraft Structures II	3	1	2	5	6
3.	XAS503	Rocket and Spacecraft Propulsion	3	1	0	4	4
4.	XAS504	Space Mechanics	3	0	0	3	3
5.	XASE**	Professional Elective Course II	3	1	0	4	4
6.	X**OE*	Open Elective I	3	0	0	3	3
7.	XUM507	Essence of Indian Traditional knowledge	3	0	0	0	3
8.	XAS508	In-Plant Training-II	0	0	2	0	4
9.	XASM01	Elements of Drone Technology	1	0	1	0	2
TOTAL						22	33

SEMESTER VI

S.No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XAS601	UAV Technologies	3	0	0	3	3
2.	XAS602	Finite Element Analysis	3	1	0	4	4
1.	XAS601	Flight Dynamics	3	1	2	5	6
	XAS604	Avionics	3	0	2	4	5
5.	XASE**	Professional Elective Course – III	3	0	0	3	3
6.	X**OE**	Open Elective II	3	0	0	3	3
7.	XCI507	Constitution of India	3	0	0	0	3
8.	XASM02	CAD Modeling	2	0	0	0	2
TOTAL						22	28

SEMESTER VII

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XAS701	Computational Fluid Dynamics	3	1	2	5	6
2.	XASE**	Professional Elective Course – IV	3	0	0	3	3
3.	XASE**	Professional Elective Course – V	3	0	0	3	3
4.	X**OE*	Open Elective III	3	0	0	3	3
5.	XAS705	Project Phase I	0	0	8	4	8
6.	XUM706	Cyber Security	3	0	0	0	3
7.	XAS707	In-Plant Training-III	0	0	4	2	8
8.	XASM03	Aero and Space Modelling	2	0	0	0	2
TOTAL						20	36

SEMESTER VIII

S. No.	COURSECODE	COURSE NAME	L	T	P	C	H
1.	XASE**	Professional Elective Course – VI	3	0	0	3	3
2.	X**OE*	Open Elective IV	3	0	0	3	3

3.	X**OE*	Open Elective V	3	0	0	3	3
4.	XAS804	Project Phase II	0	0	12	6	24
TOTAL						15	33

TOTAL CREDITS = 161

LIST OF ELECTIVES

PROFESSIONAL ELECTIVE COURSE – I

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE01	Aircraft Systems and Instruments	3	0	0	3	3
2.	XASE02	Sensors and Measurements	3	0	0	3	3
3.	XASE03	Control Systems	3	0	0	3	3
4.	XASE04	Airframe Maintenance and Repair	3	0	0	3	3
5.	XASE05	Theory of Elasticity	3	0	0	3	3

PROFESSIONAL ELECTIVE COURSE – II

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE06	Heat Transfer	3	1	0	4	4
2.	XASE07	Mechanics of Machines	3	1	0	4	4
3.	XASE08	Wind Tunnel Techniques	3	1	0	4	4
4.	XASE09	Theory of Vibrations	3	1	0	4	4
5.	XASE10	Composite Materials	3	1	0	4	4

PROFESSIONAL ELECTIVE COURSE – III

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE11	Space Weapons and Warfare	3	0	0	3	3
2.	XASE12	Automation and Control Engineering	3	0	0	3	3
3.	XASE13	High Temperature Materials	3	0	0	3	3
4.	XASE14	Aircraft Rules and Regulations CAR I and II	3	0	0	3	3
5.	XASE15	Aeroelasticity	3	0	0	3	3

PROFESSIONAL ELECTIVE COURSE – IV

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE16	Experimental Stress Analysis	3	0	0	3	3
2.	XASE17	Aircraft Engine Maintenance	3	0	0	3	3
3.	XASE18	Navigation Systems	3	0	0	3	3
4.	XASE19	Fatigue and Fracture Mechanics	3	0	0	3	3
5.	XASE20	Helicopter Maintenance	3	0	0	3	3

PROFESSIONAL ELECTIVE COURSE – V

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE21	Rockets and Missiles	3	0	0	3	3
2.	XASE22	Disaster Management	3	0	0	3	3
3.	XASE23	Air Traffic Control and Aerodrome Design	3	0	0	3	3
4.	XASE24	Missile Guidance and Control	3	0	0	3	3
5.	XASE25	Air Transportation and Aircraft Maintenance	3	0	0	3	3

PROFESSIONAL ELECTIVE COURSE – VI

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASE26	Theory of Plates and Shells	3	0	0	3	3
2.	XASE27	Spacecraft Power Systems	3	0	0	3	3
3.	XASE28	Cryogenics	3	0	0	3	3
4.	XASE29	Hypersonic Aerodynamics	3	0	0	3	3
5.	XASE30	Computer Integrated Manufacturing	3	0	0	3	3

OPEN ELECTIVE COURSE (Offered to other Department)

S. No.	COURSE CODE	COURSE NAME	L	T	P	C	H
1.	XASOE1	Elements of Aeronautics	3	0	0	3	3
2.	XASOE2	Fundamentals of Rockets and Missiles	3	0	0	3	3

28.5.2018 Dated BoS Minutes

DEPARTMENT OF AEROSPACE ENGINEERING

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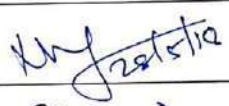
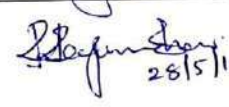
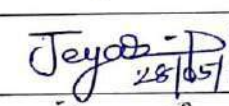
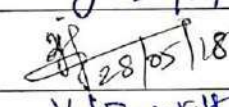
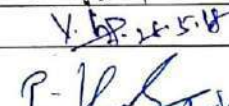
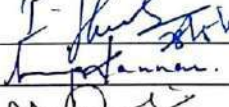


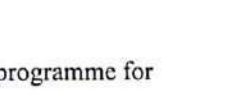

MINUTES OF THE BOARD OF STUDIES

(Regulations 2018)

Date: 28.05.2018

Time: 10.00 AM

Members present

S.No	Name	Designation	Representing	Signature
1.	Mr. R. K. Muthuraman	Head /Aerospace	Chair person	
2.	Dr. R. Rajendran	Prof./ Dayananda Sagar College of Engg. Bangalore	Member (Academic)	
3.	Dr. D. Jeyasimman	Head/Mechanical	Senior Faculty Member	
4.	Mr. R. Suresh	Asst. Professor	Department BoS Member	
5.	Mr. V. Nagaraj	Asst. Professor	Faculty Member	
6.	Mr. I. Karthic Subramaniyan	Asst. Professor	Faculty Member	
7.	MS. Anuja Kannan	HR / Dronera	Alumini	
8.	Mr. M. Ajith	Drone Pilot / Dronera	Alumini	
9.	Mr. S. Shyam Shankar	IV Year	Student	
10.	Ms. R. Sushmitha	III Year	Student	

Agenda:

1. Framing Curriculum for B.Tech (Aerospace Engineering) Degree programme for Regulation 2018.

2. Developing Syllabus from I - IV semesters for B.Tech (Aerospace Engineering) Degree programme

3. Checking the course outcomes mapping with program outcome

The members of Board of studies of Department of Aerospace Engineering met on 28.5.2018 and discussed and framed the curriculum and syllabus for B.Tech (Aerospace Engineering) programme for Regulation 2018.

This will be submitted to the 29th Academic council meeting to be conducted on 09.06.2018 for approval.

I FEEDBACK COLLECTED, ANALYZED AND ACTION TAKEN

Alumni students: Yes

Parents: Yes

Employers: Yes

Students: Yes

Important observations made and addressed in BOS

1. Alumni and Students have participated in Department Advisory Committee Meeting (DAC) and recommended the curriculum (1 to 8 Semester) & syllabus (1 to 4 Semester) of Regulation 2018 to implement.

2. During Parent Teachers Meeting held on 28.04.2018, feedback collected from parents on curriculum & syllabus. They have mentioned that the curriculum & syllabus is good.

3. Feedback from employer has been collected and they have mentioned that the curriculum & syllabus to be designed to make students industry ready. By considering that, two minor courses (PCC-AS15 CATIA Software & PCC-AS17 Elements of Drone Technology) are included in Regulation 2018.

II COMPARISON BETWEEN REGULATIONS 2017 & 2018

Semester	REGULATION 2017	REGULATION 2018	Addition/ Deletion
	Course name	Course name	
I	Algebra, Differential Calculus and their applications	Chemistry	-
	Engineering Mechanics	Mathematics I	-
	Electrical and Electronics Engineering Systems	Basic Electrical and Electronics Engineering	-
	Applied Physics	English	English added

	Study Skills	-	Study Skills removed
	Human Ethics, Values, Rights and Gender Equality	-	Human Ethics, Values, Rights and Gender Equality removed
	-	Workshop Practices	-
II	Calculus and Laplace Transforms	Mathematics II	-
	-	Physics I	Moved from I semester to II semester
	Computer Programming	Computer Programming	-
	Mechanical and Civil Engineering Systems	-	Mechanical and Civil Engineering Systems removed
	Applied Chemistry	-	Moved to I semester from II semester
	Engineering Graphics	Engineering Graphics	-
	Speech Communication	-	Speech Communication removed
	-	Environmental Studies	Moved from VI semester to II semester
III	Transforms and Partial Differential Equations	Mathematics III	-
	-	Physics II	Physics II added
	Engineering Thermodynamics	-	Moved to IV semester from III semester
	Strength of Materials	Solid Mechanics	-
	Fluid Mechanics and Machinery	Fluid Mechanics and Machinery	-
	Engineering Materials	Engineering Materials	-
	-	Engineering Mechanics	Moved from I semester to III semester
	Entrepreneurship Development	-	Entrepreneurship Development removed

	Interpersonal Communication	-	Interpersonal Communication removed
	In-Plant Training - I	-	In-Plant Training - I removed
IV	Operations Research	-	Operations Research removed
	-	Engineering Thermodynamics	-
	Introduction to Aircraft and Aerospace Vehicles	Introduction to Aircraft and Aerospace Vehicles	-
	Incompressible Aerodynamics	Aerodynamics I	-
	Aircraft Propulsion	-	Aircraft Propulsion removed
	Fundamentals of Aircraft Structures	Aircraft Structures I	-
	-	Professional Elective Course I	PEC I moved from V semester to IV semester
	Economics for Engineers	-	Economics for Engineers removed
	-	Constitution of India	Constitution of India added
	Technical Communication	-	Technical Communication removed
V	Numerical Methods	-	Numerical Methods removed
	Compressible Aerodynamics	Aerodynamics II	-
	Mechanics of Machines	-	Mechanics of Machines removed
	-	Aerospace Propulsion	Aerospace Propulsion moved to V semester from VI semester
	Advanced Aircraft Structures	Aircraft Structures II	-

	-	Elements of Satellite Technology	Elements of Satellite Technology added as mandatory course
	Professional Elective - I	-	-
	-	Professional Elective Course II	PEC II moved to V semester from VI semester
	Total Quality Management	-	Total Quality Management removed
	-	Open Elective Course I	OEC I moved to V semester from VI semester
	-	Essence of Indian Traditional knowledge	Essence of Indian Traditional knowledge added
	Business Communication	-	Business Communication removed
	In-Plant Training - II	In-Plant Training	-
	Aircraft Systems and Instruments	-	Aircraft Systems and Instruments included in PEC I
VI	Open Elective - I	-	-
	Flight Dynamics	Flight Dynamics	-
	Mechanics of Space Vehicles	Space Mechanics	-
	UAV Design	UAV Design	-
	-	Avionics	Avionics moved from VII semester to VI semester
	Aerospace Propulsion	-	-
	-	Professional Elective Course - III	PEC III moved from VII semester to VI semester
	Professional Elective - II	-	-
	-	Professional Elective Course - IV	PEC IV moved from VII semester to VI semester

	Environmental Studies	-	-
	-	Open Elective Course II	OEC II moved from VII to VI semester
	Academic Writing	-	Academic Writing removed
	-	CATIA Software	CATIA Software added as minor course
	Aero Engine Repair and Maintenance	-	AERM included in PEC IV
VII	Open Elective - II	-	-
	Computational Fluid Dynamics	Computational Fluid Dynamics	-
	Avionics	-	-
	-	Professional Elective Course – V	PEC V moved from VIII semester to VII semester
	-	Professional Elective Course – VI	PEC VI moved from VIII semester to VII semester
	Professional Elective – III	-	-
	Professional Elective – IV	-	-
	-	Open Elective Course III	OEC III moved from VIII semester to VII semester
	-	Elements of Drone Technology	Elements of Drone Technology added as minor course
	Cyber Security	-	Cyber Security moved to VIII semester from VII semester
	Project Phase - I	Project Phase I	-
	Career Development Skills	-	Career Development Skills removed
	In-Plant Training - III	-	In-Plant Training -- III removed

	Non Destructive Testing	-	Non Destructive Testing removed
VIII	Open Elective – III	-	-
	-	Open Elective IV	Open Elective IV added
	-	Open Elective V	Open Elective V added
	Professional Elective – V	-	-
	Professional Elective – VI	-	-
	Project Phase II	Project Phase II	-
	-	Cyber Security	-

III. COMPARISON WITH AICTE MODEL CURRICULUM

S.No	Semester	Course Name	Course content Addition	Course content Deletion	Percentage of change	General observations With AICTE Curriculum
	I	-	-	-	-	-
	II	-	-	-	-	-
	III	Solid Mechanics Fluid Mechanics and Machinery	-	-	0% 15%	- As credit is reduced from 3 4 to 3, some topics which are not much related Aerospace field have been removed.
	IV	Engineering Thermodynamics	Diagonal (mixed flow) compre	Carnot cycle – Carnot theorem – Clausius inequality – Concept of entropy – Principle of increase of entropy	20%	As credit is reduced from 3 4 to 3, some topics which are not much related

			ssor	<ul style="list-style-type: none"> - System and surroundings – Universe – Properties – State-Process – Cycle – Equilibrium – Work and heat transfer – Point and path functions - Working principle of spark ignition and compression ignition engines - Basic psychrometry – Simple psychrometric processes – Types of air conditioning systems – Selection criteria for a particular application (qualitative treatment only). 		Aerospace field have been removed.
		Introduction to Aircraft and Aerospace Vehicles	<ul style="list-style-type: none"> Basic flight instruments - Turning performance - Types of drag - Various ceilings 	<ul style="list-style-type: none"> Developments in aerodynamics - materials - structures and propulsion over the years - General types of construction - Metallic and non-metallic materials – ceramics - Use of propeller and jets for thrust production - Space vehicle performance and control - Effects of changes of power, altitude and weight – Directional, longitudinal and lateral stability and their control. 	20%	Syllabus is updated as per current requirement
		Aerodynamics I	-	<ul style="list-style-type: none"> Karman – Trefftz profiles – Introduction to complex variable – complex potential 	5%	Syllabus is updated as per current requirement

				complex potential function.		
		Aircraft Structures I	-	Application of Von-Mises theory to aircraft components	2%	-
		Professional Elective I	-	Boundary Layer Theory removed	20%	As boundary layer theory is already available in Aerodynamics, it is removed

IV. LIST OF NEWLY INTRODUCED COURSES IN REGULATION 2018

S. No.	Course Name
1.	XGS103- English
2.	XES202 – Environmental Sciences
3.	XAS503- Rocket and Spacecraft Propulsion
4.	XUM507- Essence of Indian Traditional knowledge
5.	XASM01- Elements of Drone Technology
6.	XUM607- Constitution of India
7.	XASM02- CAD Modeling
8.	XASM03 – Aero and Space Modeling
9.	XASE30 – Computer Integrated Manufacturing

V. COURSES INTRODUCED FOR IMPROVING THE EMPLOYABILITY SKILLS OF THE STUDENTS.

S. No.	Course Name
1.	XAS302- Material Science and Metallurgy
2.	XUM305 – Entrepreneurship Development
3.	XAS307- In-Plant Training
4.	XAS405-Elements of Satellite Technology
5.	XAS501- Aerodynamics-II
6.	XAS502-Aircraft Structures-II
7.	XAS503- Rocket and Spacecraft Propulsion
8.	XAS504- Space Mechanics
9.	XASM01- Elements of Drone Technology
10.	XAS601- UAV Technologies
11.	XAS602- Finite Element Analysis
12.	XASM02- CAD Modeling
13.	XAS701- Computational Fluid Dynamics
14.	XAS705- Project Phase – I
15.	XASM03 – Aero and Space Modeling
16.	XAS804- Project Phase - II

17.	XASE04- Airframe Maintenance and Repair
18.	XASE10- Composite Materials
19.	XASE11- Space Weapons and Warfare
20.	XASE12- Automation and Control Engineering
21.	XASE17- Aircraft Engine Maintenance
22.	XASE20- Helicopter Maintenance
23.	XASE21- Rockets and Missiles
24.	XASE25- Air Transportation and Aerodrome Design
25.	XASE27- Spacecraft Power Systems
26.	XASE28 – Cryogenics
27.	XASE29- Hypersonic Aerodynamics
28.	XASE30- Computer Integrated Manufacturing

VI. VALUE ADDED COURSES PROVIDED

S. No.	Course Name
1.	CATIA Software

VII. OVERALL PERCENTAGE OF CHANGE COMPARED TO REGULATIONS 2017

20%


 HoD/Aerospace
 (R.K.Muthuraman)