Indian Institute of Space Science and Technology

Thiruvananthapuram

B.Tech. Aerospace Engineering

Curriculum

(Effective from 2022 Admission)

Department of Aerospace Engineering

SEMESTER I

CODE	TITLE	L	T	P	C
MA111	Calculus	3	1	-	4
MA112	Computer Programming and Applications	2	-	3	3
PH111	Physics I	3	1	-	4
CH111	Chemistry	2	1	-	3
AE111	Introduction to Aerospace Engineering	3	-	-	3
HS111	Communication Skills	2	-	3	3
PH131	Physics Lab	-	-	3	1
AE131	Basic Engineering Lab	-	-	3	1
	Total	15	3	12	22

SEMESTER II

CODE	TITLE	L	T	P	C
MA121	Vector Calculus and Ordinary Differential Equations	2	1	-	3
PH121	Physics II	3	1	-	4
CH121	Materials Science and Metallurgy	3	-	-	3
AV121	Data Structures and Algorithms	3	1	-	4
AV122	Basic Electrical and Electronics Engineering	3	1	-	4
AE141	Engineering Graphics	1	-	3	2
CH141	Chemistry Lab	-	-	3	1
	Total	15	4	6	21

SEMESTER III

CODE	TITLE	L	T	P	C
MA211	Linear Algebra, Complex Analysis, and Fourier Series	3	-	-	3
AE211	Engineering Thermodynamics	3	-	-	3
AE212	Mechanics of Solids	3	-	-	3
AE213	Fluid Mechanics	3	-	-	3
AE214	Materials Processing Techniques	3	-	-	3
HS211	Introduction to Economics	2	-	-	2
AE231	Strength of Materials Lab	-	-	3	1
AE232	Machine Drawing	-	-	3	1
	Total	17	0	6	19

SEMESTER IV

CODE	TITLE	L	T	P	C
MA221	Integral Transforms, PDE, and Calculus of Variations	3	-	-	3
AE221	Aerodynamics	3	-	-	3
AE222	Heat Transfer	3	-	-	3
AE223	Applied Dynamics and Vibration	3	-	-	3
AE224	Machining Science and Technology	3	-	-	3
HS221	Introduction to Social Science and Ethics	2	-	-	2
AE241	Thermal and Fluid Lab	-	-	3	1
AE242	Metrology and Computer Aided Inspection	1	-	3	2
	Total	18	0	6	20

SEMESTER V

CODE	TITLE	L	T	P	C
MA311	Probability, Statistics, and Numerical Methods	3	-	-	3
AE311	Compressible Flow	3	-	-	3
AE312	Atmospheric Flight Mechanics	3	-	-	3
AE313	Spaceflight Mechanics	3	-	-	3
AE314	Theory of Elasticity	3	-	-	3
AV315	Automatic Control	2	1	-	3
AE331	Aerodynamics Lab	1	-	3	2
AE332	Modeling and Analysis Lab	1	-	3	2
	Total	19	1	6	22

SEMESTER VI

CODE	TITLE	L	T	P	C
AE321	Air-Breathing Propulsion	3	-	-	3
AE322	Aerospace Structures	3	-	-	3
HS321	Principles of Management Systems	3	-	-	3
E01	*Elective I*	3	-	-	3
E02	*Elective II*	3	-	-	3
E03	*Elective III*	3	-	-	3
AE341	Aerospace Structures Lab	-	-	3	1
AE342	Manufacturing Processes Lab	-	-	3	1
	Total	18	0	6	20

SEMESTER VII

CODE	TITLE	L	T	P	C
AE411	Rocket Propulsion	3	-	-	3
AE412	Aerospace Vehicle Design	2	-	3	3
AE413	Optimization Techniques in Engineering	3	-	-	3
CH411	Environmental Science and Engineering	2	-	-	2
E04	*Elective IV*	3	-	-	3
E05	*Institute Elective*	2/3	-	-	2/3
AE431	Flight Mechanics and Propulsion Lab	-	-	3	1
AV435	Instrumentation and Control Systems Lab	1	-	3	2
AE432	Summer Internship and Training	-	-	-	3
	Total	16/17	0	9	22/23

SEMESTER VIII

CODE	TITLE	L	T	P	C
AE441	Comprehensive Viva-Voce	-	-	-	3
AE442	Project Work	-	-	-	12
	Total	0	0	0	15

SEMESTER–WISE CREDITS

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	22	21	19	20	22	20	22/23	15	161/162

NOTE: Minimum credit to be earned for B.Tech. degree in Aerospace Engineering: 161

LIST OF ELECTIVES

CODE	TITLE
AE447	Multi-Rigid Body Dynamics
AE448	Analytical Methods in Thermal and Fluid Science
AE449	Robot Mechanisms and Technology
AE450	Optical and Laser Based Combustion Diagnostics
AE451	Physiological Fluid Mechanics
AE452	Random Vibrations and Applications
AE453	Rotordynamics
AE454	Experimental Modal Analysis
AE455	Theory of Plasticity and Metal Forming
AE456	Numerical Methods for Scientific Computing
AE457	Flight Dynamics and Control
AE458	Structural Acoustics and Noise Control
AE459	Machine Design
AE460	Aeroacoustics
AE461	Applied Aerodynamics
AE462	Advanced Aerospace Structures
AE463	Advanced Fluid Mechanics
AE464	Advanced Heat Transfer
AE465	Advanced Propulsion Systems
AE466	Structural Dynamics and Aeroelasticity
AE467	Analysis and Design of Composite Structures
AE468	Computational Fluid Dynamics
AE469	Computer Integrated Manufacturing
AE470	Design and Analysis of Aerospace Structures
AE471	Convective Heat Transfer
AE472	Experimental Aerodynamics
AE473	Finite Element Method
AE474	Fracture Mechanics

AE475	Introduction to Space Laws*
AE476	Industrial Engineering*
AE477	Fundamentals of Combustion
AE478	Supply Chain Management
AE479	Solar Thermal Energy
AE480	Boundary Layer Theory
AE481	Operations Research*
AE482	High Temperature Gas Dynamics
AE483	Introduction to Robotics
AE484	Space Mission Design and Optimization
AE485	Molecular Dynamics and Materials Failure
AE486	Refrigeration and Cryogenics
AE487	Turbomachines
AE488	Advanced Manufacturing and Automation
AE489	Aerospace Materials and Processes
AE490	Heat Transfer in Space Applications
AE491	Human Behaviour in Organizations
AE492	Hypersonic Aerothermodynamics
AE493	Two-Phase Flow and Heat Transfer
AE494	Turbulence in Fluid Flows
AE495	Introduction to Flow Instability
AE496	Multidisciplinary Design Optimization
AE497	Energy Methods in Engineering
AE498	Computational Methods for Compressible Flow
AE499	Elastic Wave Propagation in Solids

*Institute Electives