School of Aerospace and Defence Technology

Curriculum for Program:

Bachelor of Technology in Defence Technology (Aerospace Technology)

Course Description

This program builds a strong foundation in aerospace engineering with defence-oriented applications, preparing students for careers in UAVs, missiles, space systems, avionics, and strategic aerospace platforms.

Program Duration

Total Duration: 4 years (8 semesters)
Degrees Awarded: **Bachelor of Technology in Defence Technology (Aerospace Technology)**
(upon completion of 4 years)

List of Courses (Semester-Wise)

First Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	C1UC126B	Calculus and Linear Algebra	3+0+1+0	4
2	G2UA120B	Basic Electrical and Electronics Engineering	3+0+1+0	4
3	R1UC101B	Programming for problem solving using C	3+0+1+0	4
4	X1UA101T	Concepts and Applications of Defence Technology	3+0+0+0	3
5	G3UB102C	Engineering Design and prototyping	3+0+1+0	4
6	O1UA105L	Aptitude Skill	0+0+2+0	2
7	L1UB120T	Yoga	0+0+1+0	1
		Total		**22**

Second Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	C1UC224T	Discrete Mathematics	3+0+0+0	3
2	C1UC210B	Multi Variable Calculus and differential equations	3+0+1+0	4
3	203	Introduction of Quantum Computing	2+0+1+0	3
4	204	Introduction to weapon system	3+0+0+0	3
5	205	OOPS using Python	3+0+1+0	4
6	206	Applied Aptitude Skills	0+0+1+0	1
7	207	Data and Digital Literacy	0+0+2+0	2
8	208	Environmental Impact Analysis	0+0+1+0	NC
		Total		**20**

Third Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	X1UA307B	Fluid Mechanics	3+0+1+0	4
2	X1UA301C	Thermodynamics and Propulsion	3+0+1+0	4
3	X1UA302T	Aerospace systems and Instrumentation	3+0+0+0	3
4	X1UA308B	Mechanics of Material	3+0+1+0	4
5	X1UA303B	Disruptive technology in defence	2+0+1+0	3
6	306	Air-vehicle Drawing	0+0+1+0	1
7	307	AI and Cognitive Systems	0+0+2+0	2
8	308	Advanced Aptitude Skill	0+0+1+0	1
9	309	Internship-I	1	1
		Total		**23**

Fourth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	401	Flight Mechanics	3+0+0+0	3
2	402	Aircraft Structure – I	3+0+1+0	4
3	403	Avionics and Control Systems	3+0+1+0	4
4	404	Aerodynamics I	3+0+1+0	4
5	405	Technology innovation and project management in defence	3+0+0+0	3
6	406	Prompting and AI Tools	0+0+2+0	2
7	407	Aptitude Proficiency	0+0+1+0	1
		Total		**21**

Fifth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	501	Aerodynamics II	3+0+1+0	4
2	502	Space Technology and Satellite Systems	3+0+1+0	4
3	503	Aerospace Materials and Composite Structures	3+0+1+0	4
4	504	Aircraft Structure	3+0+1+0	4
5	505	Department Elective – I	3+0+0+0	3
6	506	Soft Skills and Aptitude Readiness	0+0+2+0	2
7	507	Internship-II	1	1
		Total		**22**

Sixth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	601	Aerospace vehicle and UAV Design	3+0+1+0	4
2	602	Introduction to Vibrations	3+0+0+0	3
3	603	Guidance, Navigation and Control	3+0+0+0	3
4	604	Computational Fluid Dynamics	3+0+1+0	4
5	605	Department Elective – II	3+0+0+0	3
6	606	Military standard and safety	3+0+0+0	4
		Total		**21**

Seventh Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	701	Rocket and Missile Technology	3+0+1+0	4
2	702	Finite Element Method	3+0+1+0	4
3	703	Department Elective – III		6
4	704	Capstone Design Phase-I	4	4
5	705	Internship-III	1	1
		Total		**19**

Eight Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	801	Capstone Design Phase-II (Six month compulsory Internship)	12	12
		Total		**12**
Grand Total				**160**

Suggested Total: 160 credits including laboratories, internship, and capstone project.

NOTE: No teaching course is offered in Semester – VIII, so that students may be send to DRDO Labs/ Defence Industries/ DPSU for a duration of six months (approximately) to carry out their project work.

Elective Basket:

Department Elective – I

Course Code	Course Tittle	L+T+P+S_w	Credits
505	Aero-Elasticity	3+0+0+0	3
505	Integration of avionic and defence system	3+0+0+0	3
505	Turbulent Flows	3+0+0+0	3
505	Optimization for Engineering Design	3+0+0+0	3
505	Heat and Mass Transfer	3+0+0+0	3

Department Elective – II

Course Code	Course Tittle	L+T+P+S_w	Credits
605	Advanced Composite Materials	3+0+0+0	3
605	Advance Propulsion	3+0+0+0	3
605	Aircraft Stealth Technology	3+0+0+0	3
605	Satellite Engineering	3+0+0+0	3
605	Radar Signal Processing	3+0+0+0	3
605	Radar and Electronic Warfare Basic	3+0+0+0	3

Department Elective – III

Course Code	Course Tittle	L+T+P+S_w	Credits
703	Additive Manufacturing in Defence	3+0+0+0	3
703	AI in Defence Decision Systems	3+0+0+0	3
703	Defence policies and laws	3+0+0+0	3
703	Advanced Drones	3+0+0+0	3
703	Launch Vehicle System	3+0+0+0	3
703	Hypersonic Aerodynamics	3+0+0+0	3