School of Aerospace and Defence Technology

Curriculum for Program:

Bachelor of Technology in Defence Technology

(Artificial Intelligence and Cyber Security)

Course Description

This course provides an in-depth understanding of cyber security principles, challenges, and solutions pertinent to defence applications. It covers the threat landscape, defensive strategies, cryptography, cyber warfare, and legal aspects related to cyber security in the defence sector.

Program Duration

Total Duration: 4 years (8 semesters)
Degrees Awarded: Bachelor of Technology in Defence Technology (AI & Cyber Security)
(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	R1UC301B	Operating Systems	3+0+0+0	3
2	R1UC302B	Data Structures	2+0+0+0	2
3	X1UA303B	Disruptive technology in defence	2+0+1+0	3
4	E2UC302B	Database Management Systems	3+0+0+0	3
5	X1UA305L	IT Workshop	0+0+1+0	1
6	X1UA306B	Deep learning and neural network	3+0+1+0	4
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		**20**

Fourth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	401	Software Engineering	3+1+0+0	4
2	402	Design and analysis of Algorithm	3+0+2+0	5
3	403	Cyber Security and Cryptography (Inscription should be added)	3+0+1+0	4
4	404	System Security & Linux Administration	4+0+1+0	5
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		**24**

Fifth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	501	Ethical Hacking & Penetration Test	3+0+1+0	4
2	502	AR/VR, Computer Vision & Robotics	3+0+1+0	4
3	503	Network and Cloud Security	3+0+2+0	5
4	504	AI and Machine Learning for Cyber Security	0+0+1+0	1
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		**19**

Sixth Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	601	Drone Technology and security	3+0+0+0	3
2	602	Digital Forensics and Cyber investigation	3+0+1+0	4
3	603	Industrial Control Systems (ICS)/ Supervisory Control and Data Acquisition (SCADA) Security	2+0+1+0	3
4	604	End point Security	2+0+1+0	3
5	605	Department Elective – II	3+0+0+0	3
6	606	Military standard and safety	3+0+0+0	4
7	607	AI in Autonomous vehicle	3+0+0+0	3
		Total		**23**

Seventh Semester				
S.No	**Course Code**	**Course Title**	**(L+T+P+S_w)**	**Credits**
1	701	Secure Software Development	2+0+0+0	2
2	702	Satellite Cybersecurity	3+0+0+0	3
3	703	Industrial Internet of Things (IIOT)	3+0+0+0	3
4	704	Security Compliance and Audit Methodology	2+0+0+0	2
5	705	Open Source Intelligence	2+0+0+0	2
6	706	Department Elective – III	3+0+0+0	3
7	707	Capstone Design Phase-I	4	4
8	708	Internship-III	1	1
		Total		**20**

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	Generative AI for Military Simulation	3+0+0+0	3
505	Quantum Cryptography	3+0+0+0	3
505	AI for UAV	3+0+0+0	3
505	Operation Technology Security	3+0+0+0	3
505	Warfare and simulations	3+0+0+0	3

Department Elective – II

Course Code	Course Tittle	L+T+P+S_w	Credits
605	AI for UGV	3+0+0+0	3
605	AI Data Centre	3+0+0+0	3
605	AI for ISR (Intelligence, Surveillance, Reconnaissance)	3+0+0+0	3
605	Cyber Security Analytics and Intelligence	3+0+0+0	3
605	Reliability and Maintenance Engineering	3+0+0+0	3

Department Elective – III

Course Code	Course Tittle	L+T+P+S_w	Credits
706	Ethical AI Law	3+0+0+0	3
706	AI in Defence Decision Systems	3+0+0+0	3
706	Collaborative Combat Aircraft	3+0+0+0	3
706	DevOps and Security Automation	3+0+0+0	3
706	Cyber-Physical Systems for Defence	3+0+0+0	3