IN-SPACe Short-Term Skill Development

Course on

Fundamentals of Launch Vehicle Technologies



Schedule : November 22-27, 2026

Venue : Chanakya University,Bengaluru

IN-SPACe Short-Term Skill Development Course on "Fundamentals of Launch Vehicle Technologies"

Government of India under the visionary leadership of Hon'ble PM Shri Narendra Modi has initiated historic space sector reforms. The objective of space reforms is to make India a leading space economy globally, through increased private sector participation. Indian National Space Promotion and Authorization Centre (IN-SPACe) has been formed under Department of Space (DOS), to promote, enable, authorize and supervise Non-Government Entities (NGEs) and academia to undertake space activities.

OBJECTIVE

Skill development of Industry and Academia in Space Sector

COURSE INFORMATION

In order to transform the Government's vision into reality, IN-SPACe in association with ISRO, NGEs and Academia is pleased to announce registration for the Short-Term Course on "Fundamentals of Launch Vehicle Technologies". This unique course is designed for the benefit of NGEs and Academia to provide the participants with basic understanding of fundamentals of launch vehicle technologies

ABSTRACT

The course on "Fundamentals of Launch Vehicle Technologies" provides an overview of launch vehicle design drivers and technology elements. This unique course gives an insight into configuration aspects such as sizing of launch vehicle, trade off studies, considerations for propellant choice of various stages, design requirements to cater to of Aerodynamic forces and flight dynamics etc. Further, design approaches for Structures, Control systems & Actuators, Guidance, Navigation & Control, Thermal management, Avionics Systems, Pyro elements etc are enumerated. Also included are Test & Evaluation methodologies at different phases of realization, Quality Assurance aspects, Integration & Vehicle checkout, System Engineering approach are addressed along with emerging trends in realization Launch Vehicle Systems.

Inaugural Session (22-11-2026)			
15:00 - 18:00 Hrs.	Inaugural Session	• Invocation • Introduction of participants • Address by Chief Guest • National Anthem	Chief Guest: Dr. S Somanath Former Secretary DOS/Former Chairman ISRO/Honorary Advisor for Space Technology, Govt. of Andhra Pradesh
	Ice Breaking Session		
DAY-1 (23-11-2026)			
Time	Module	Title of Talk	Faculty/Course Instructor
09:00 - 10:00 Hrs.	Launch Vehicle Design Drivers	L1: Introduction to launch vehicle design: mission requirements, design drivers and performance parameters	Ms. Sheela DS CEO, Spacelabs Former GD, VSSC
10:00 - 11:00 Hrs.		L2: Launch Vehicle conceptual design, trade off studies, preliminary sizing	Shri Priyanshu Mishra TDSD/AERO, VSSC
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Sub System Design	L3: Avionics System Design: NGC and TTC Electronics Design	Shri Narayanan Namboodiripad Former AD, VSSC/ISRO
12:30 - 13:30 Hrs.	Launch Vehicle Design Drivers	L4: Aerodynamics and Flight Dyanmics Aerodynamic forces and trajectory optimization	Dr. V Ashok Former AD, VSSC Prof, Satish Dhawan Professor, VSSC
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Launch Vehicle Design Drivers	L5: Design of Launch Vehicle Structures	Shri Sirajudeen Ahmed S Former DD, STR, VSSC
15:30 - 16:30 Hrs.		L6: Propulsion System Design – Propellant choice & Design Approaches	TBD
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects	P1: Evolution of GSLV launch vehicle design	Dr.Umamaheshwaran R Distinguished Scientist (Retd,) Former Scientist Secretary & Director HSFC, ISRO
18:00 - 19:00 Hrs.	Networking Session- 1 among participants (Optional)		
20:00 - 21:00 Hrs.	DInner		

DAY-2 (24-11-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Subsystem Design	L7: Control Systems & Actuators for Launch Vehicles	Shri N Raghu Former DD, VSSC
10:00 - 11:00 Hrs.		L8: Guidance, Navigation, and Control (GNC) System Design: Sensor selection, navigation algorithms, and control laws	Dr. Brinda V Outstanding Scientist (Retd.) Former Director, ISRO Consultant, Agnikul Cosmos
11:00 - 11:30 Hrs.	Tea Break		
11:30 - 12:30 Hrs.	Subsystem Design	L9: Thermal Management System Design: Thermal analysis, insulation materials, and active cooling techniques	Dr. MJ Chacko Scientist/Engineer H (Retd.) Former GD, Aero, VSSC VP, Thermal, Skyroot Aero Space
12:30 - 13:30 Hrs.	Advanced Topics and Future Trends	L10: Additive manufacturing for LV hardware, design for additive manufacturing	Dr. Anil Kumar V MPA/MME, VSSC
13:30 - 14:30 Hrs.	Lunch Break		
14:30 - 15:30 Hrs.	Subsystem Design	L11: Stage Separation and Payload Deployment: mechanisms, payload adapters	Shri U A Subramanian Outstanding Scientist (Retd.) ISRO Professor of Practice, IIST
15:30 - 16:30 Hrs.		L12: Pro Systems for Launch Vehicles	Shri Baby Abraham Former DD, ASOE, VSSC
16:30 - 17:00 Hrs.	Tea Break		
17:00 - 18:00 Hrs.	Practical Aspects	P2: Model-Based Systems Enginerring (MBSE): Applying modeling and Simulation techinque to improve design and testing process	Dr. Shankar Akella, Principal Consultant & Shri Mrityunjay Kumar, Principal Consultant, Siemens Industry Software (India)
18:00 - 19:00 Hrs.	Networking Session - 2 among participants (optional)		
20:00 - 21:00 Hrs.	DInner		

Day-3 (25-11-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Software Assurance	L13: Software assurance and evaluation for launch vehicles	Shri Kuldeep Chhakara Former GD, RQA - ISSD, IISU
10:00 - 11:00 Hrs.	Subsystem Design	L14: Navigation Systems for Launch Vehicles	Dr. D Sam Dayala Dev Distinguished Scientist (Retd.) Former Director, IISU Visiting Professor, Aerospace Department - IITM
11:00 - 11:30 Hrs.	High Tea		
11:30 - 12:30 Hrs.	Launch Vehicle Testing and Validation	L15: Structural & dynamic testing of vehicle systems	Shri M Vasudevan Unni Former GD, SDTG/SEE VSSC
12:30 - 13:30 Hrs.		L16: Vehicle Integration and Testing: Interface verification and system - level testing	Shri Kishornath Vukkadala Former AD, VSSC Technical Consultant for Skyroot Aerospace Limited
13:30 - 14:30 Hrs.		Lunch Break	
14:30 - 15:30 Hrs.		L17: Avionics Subsystems Test & Evaluation: Unit and subsystem level testing	Shri KS Mani Outstanding Scientist (Retd.) Former AD, IISU
15:30 - 16:30 Hrs.		L18: Non - Destructive Testing (NDT): Techniques for detecting flaws and defects in materials and structures, including composites	Shri Sridhar S Former Group Head, CMSE, VSSC
16:30 - 17:00 Hrs.	High Tea		
17:00 - 18:00 Hrs.	Practical Aspects	P3: Digital twin technology: Creating virtual replica of launch vehicles for simulation and analysis	Shri Surendra Chilaka, Principal Engineer, Siemens Industry Software (India)
18:00 - 19:00 Hrs.	Networking Session - 3 among participants (optional)		
20:00 - 21:00 Hrs.	Dinner		

Day-4 (26-11-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Launch Vehicle Testing and Validation	L19: Launch pad infrastructure, propellant storage and filling systems	Dr. R. Venkatraman Outstanding Scientist (Retd.) Former AD, SDSC SHAR
10:00 - 11:00 Hrs.		L20: Test Facilities: Wind tunnel & acoustic test facilities	Dr. Alakesh Chandra Mandal Professor &Aerospace Engineering, IIT Kanpur
11:00 - 11:30 Hrs.		High Tea	
11:30 - 12:30 Hrs.		L21: Testing of Propulsion Systems - Solid, Liquid & Cryo	TBD
12:30 - 13:30 Hrs.		L22: Vehicle Checkout: Launch simulations, pre-flight checks, and actual launch operations	Shri Shyam Kumar U Former DD, MVIT, VSSC
13:30 - 14:30 Hrs.		Lunch Break	
14:30 - 15:30 Hrs.		L23: Quality Assurance of Launch Vehicle Systems	Shri V Thaddeus Basker Former Project Director, LVM-3
15:30 - 16:30 Hrs.	Material Selection & Fabrication	L24: Launch Vehicle Systems: Materials and Fabrication aspects	Shri Muralishankar A R Former DPD, GSLV MkIII Resident Expert, IN-SPACE
16:30 - 17:00 Hrs.	High Tea		
17:00 - 18:00 Hrs.	Practical Aspects	P4: Case Study of a Launch Failure : Failure analysis methodology with an example	Shri V Thaddeus Basker Former Mission Director, LVM 3 - M2, & RLV, VSSC
18:00 - 19:00 Hrs.	Networking Session - 4 among participants (optional)		
20:00 - 21:00 Hrs.	Dinner		

Day-5 (27-11-2026)			
Time	**Module**	**Title of Talk**	**Faculty/Course Instructor**
09:00 - 10:00 Hrs.	Launch Vehicle Testing and Validation	L25: FEAST software introduction	Dr. Deepak P FSDD/STR, VSSC
10:00 - 11:00 Hrs.		L25: FEAST software introduction	
11:00 - 11:30 Hrs.		High Tea	
11:30 - 12:30 Hrs.		L27: Architecture Exploration of Launch Vehicle avionics using VisualSim Architect	Shri Tom Jose Director of Research Mirabilis Design Inc.
12:30 - 13:30 Hrs.		L28: Future trends in Launch vehicle manufacturing technologies	Dr. PV Venkitakrishnan Distinguished Scientist and Former Director, ISRO & Prof of Practice IIT Madras
13:30 - 14:30 Hrs.		Lunch Break	
14:30 - 15:30 Hrs.		L29: Re-entry technologies: Design considerations and challenges	Dr. Pankaj Priyadashi PD ATVP, VSSC
15:30 - 16:30 Hrs.	Quiz (Written Test)		
16:30 - 17:00 Hrs.	High Tea		
17:00 - 18:00 Hrs.	Launch Vehicle Design Drivers	L30: Systems Engineering Approach: Defining requirements, functional decomposition, and interface management	Dr. Prakasha Rao PJVKS Outstanding Scientist (Retd.) Former Director, SIPO, ISRO HQ
18:00 - 19:00 Hrs.	Valedictory Session & Certificate Distribution		
20:00 - 21:00 Hrs.	Dinner		

How to Apply

Interested applicants can submit their details along with course fee at www.inspace.gov.in.

Who can Apply?

Academicians, Industry Executives, Graduates, Postgraduates, Researchers and Final year UG students

Course Director: Dr. Shobana Padmanabhan, Professor & Director-Academics,Chanakya University
Shri. Murali Shankar A R , Resident Expert IN-SPACe
Course Coordinator: Mr. Sathyamanikanta B K, Project Coordinator, Chanakya University,
Dr. Vaibhav Gaur , Assistant Director, IN-SPACe
Commencement of Course: 22 November, 2026
Course Duration: November 22 to 27, 2026
Course Venue: Seminar Hall, 2nd Floor, B-Wing, Academic Block 2, Chanakya University, Bengaluru (QR code for Location given at the bottom right side of this page)
Course Fee : ₹ 15,000/- + 18% GST = ₹ 17,700/- includes food charges (Non-refundable)
(QR code for payment link given at the bottom right side of this page)
Accommodation is available at the University Faculty Guest House on a twin-sharing basis. Payment to be made at the time of check-out. (₹ 1,000 / person / night)
Course participants are advised to report at venue on November 22, 2026, before 14:00 Hrs.

IN-SPACe

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