



# भारत अंतरिक्ष शिक्षा अनुसंधान केंद्र

Bharat Space Education Research Centre

नई दिल्ली, भारत

New Delhi, India

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पत्रांक: 5-15(डब्ल्यू.आई.)/बी.एस.ई.आर.सी./2026/137

दिनांक: 23 मार्च 2026

**Subject:** "Kindly circulate this communication to all students and encourage their active participation in the **Bharat Def-Space Innovation Corridor 2026**. As part of the broader Def-Space Education and Employment for All, also invites to participate in a series of workshops is being organised for new learners in Artificial Intelligence, Air Taxi, Aircraft Design Technology, Defence Drone Technology, Rocketry Design, and Robotics Design. In addition, dedicated workshops will be conducted to commemorate **National Technology Day on 11 May 2026**." -Reg.

आदरणीय महोदया /महोदय,

## "Announcement"

### **Bharat Def-Space Innovation Corridor 2026**

An Online Technical Pool for Defence & Space, Science, Computing and Technical Innovators

The Government of India, under the visionary leadership of Hon'ble PM Shri Narendra Modi, has initiated groundbreaking reforms in the space sector. These initiatives are designed to enhance and promote defence & space education, research, and development across the nation. A key highlight is the celebration of National Space Day on August 23, which underscores India's commitment to fostering innovation and scientific excellence in space exploration. In alignment with the Viksit Bharat Abhiyan@2047.

**Bharat Def-Space Innovation Corridor 2026 will feature curated online pavilions bringing together Innovators, Startups, Professionals, and Organisations across key sectors including Defence & Space Tech, Mobility, AI, Deep-tech & Cybersecurity, HealthTech & BioTech, AgriTech, Energy & Climate Tech, Incubators & Accelerators, and Precision Manufacturing, with a focus on building a self-reliant, innovative, and future-ready India for Viksit Bharat by 2047.**

A transformative initiative to invite Students, Faculty, Research Scholars, Innovators, Entrepreneurs, Investors, Advisors, and Institutions and Connect with Industry leaders, access funding, gain mentorship, and showcase your innovations on platform.



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भारत अंतरिक्ष शिक्षा अनुसंधान केंद्र  
**Def-Space Innovation Corridor**  
An Platform for Innovators and Learners  
National Technology Day- Bharat Def-Space Innovation Week-  
National Space Day 23<sup>rd</sup> August

www.bserc.org

## Features of BDSIC 2026 - Online Technical Pool

### Mentorship & Advisory

Get guidance from industry experts, former government officials, and experienced advisors in defence and space technologies.

### Technology Transfer

Access cutting-edge defence and space technologies, research resources, and collaborations for your innovations.

### Skill Development

Participate in workshops, training programs, and certification courses on AI, quantum computing, drone technology, and more.

## Bharat Def-Space Innovation Corridor 2026

National Technology Day on 11<sup>th</sup> May

Bharat Def-Space Innovation Week : 18<sup>th</sup> - 22<sup>nd</sup> August

National Space Day : 23<sup>rd</sup> August 2026

Def-Space Virtual Tech Summit: Live-stream (Zoom/YouTube); Webinars by Bharat Space Education Research Centre , Startups on Def-Space Tech : 23<sup>rd</sup> August 2026 at 11:00 AM.

**Registration Link for Def-Space Innovation Corridor & National Technology Day:**

<https://forms.gle/yx1mXdLznQNuirLX9> ( For All )

Vision of Viksit Bharat Abhiyan @2047



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दिनांक: 23 मार्च 2026

## 1-Day Advanced Drone ( Air Taxi ) Workshop 4th April, 2026

### Content covered in Workshop

01

#### INTRODUCTION

Advanced Drone Technology

02

#### U.A.V PRINCIPLES

Engineering Principles of  
UAV Design & Aerodynamics

03

#### REGULATIONS

Regulatory and Ethical  
Considerations

04

#### PROGRAMMING

Hands-on Drone  
Programming and Simulation

05

#### REAL-WORLD

Real-World Applications  
and Case Studies

06

#### DRONES IN AI

Future of Drones in AI and  
Automation

Apply for One Day Advanced Drone Technology ( Air Taxi ) Workshop:

<https://forms.gle/HbuYZR4oi1GuupgQ9>

4<sup>th</sup> April, 2026, Duration : 3 Hours

Timings : 10:00 AM - 1:00 PM



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दिनांक: 23 मार्च 2026

## 1-Day Artificial Intelligence Workshop 4th April, 2026

### Content covered in Workshop 01

#### Accelerated 3-Hour Schedule Table

Time	Session	Core Topics	Duration	Hands-On
2:00-2:20 PM	1. What is AI?	Traditional/Generative/Agentic	20 min	Quick model comparison
2:25-2:45 PM	2. AI Query Life	Input→Tokenize→Embed→Attend→Generate	20 min	Token counter demo
2:50-3:05 PM	3. Key Terms	Context Window/Token/Temp/Embeddings	15 min	Parameter slider demo
3:05-3:25 PM	4+5. Providers & Model Selection	OpenAI/Anthropic/Google/Meta + Task matrix	20 min	Task→Tool matching
3:30-3:50 PM	6. Perfect Prompts	Role/Context/Task/Examples/Format/Constraints	20 min	Build 1 perfect prompt
3:55-4:55 PM	7. Best Practices + Projects	DOs/AVOIDs + 3 live exercises	60 min	PDF summary + code fix + image analysis

Apply for Artificial Intelligence Workshop: <https://forms.gle/pBAjtvVnxUbc2S9W7>

4<sup>th</sup> April, 2026, Duration : 3 Hours, Timings : 2:30 PM -5:00 PM

Vision of Viksit Bharat Abhiyan @2047



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दिनांक: 23 मार्च 2026

## 1-Day Aircraft Design Workshop

5th April, 2026

Time	Topic	Objectives
0 – 10 min	Introduction to Aircraft Design & Design Process	<ol style="list-style-type: none"><li>1. Understand the purpose and scope of aircraft design.</li><li>2. Learn step-by-step design methodology.</li><li>3. Identify trade-offs between performance, cost, and safety.</li></ol>
10 – 20 min	Velocity of Flight & Standard Atmosphere	Differentiate true, indicated and equivalent air speed & Mach number
20 – 30 min	Anatomy of the Aircraft	Identify major components (fuselage, wings, tail, landing gear, engines).
30 – 40 min	Nomenclature of Airfoil	Familiarize with standard terminology of the airfoil.
40 – 60 min	Aerodynamics of Airfoils (Velocity of Flow, Flow Pressure Distribution, Lift, Drag, Aerodynamic Centre and Centre of pressure.	<ol style="list-style-type: none"><li>1. Relate pressure distribution to lift &amp; drag generation.</li><li>2. Define and locate aerodynamic center and center of pressure.</li></ol>
60 – 75 min	Wing Geometry	Define aspect ratio, taper ratio, sweep, dihedral, twist.



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75 – 90 min	External Forces on Aircraft	Understand force balance in steady and accelerated flight and equations of motion.
90 – 110 min	Thrust Required Minimum & Power Required Minimum	Derive conditions for minimum thrust & power requirement.
110 – 125 min	Engine Sizing	Estimate engine thrust/power with aircraft mission needs.
125 – 140 min	Weight Estimation	Break down weights into empty, payload, fuel and structural weights
140 – 155 min	Range & Endurance	Derive the equations for range and endurance (Time of flight). Engage participants in Q&A
155 – 170 min	Flight Equilibrium & Stability  Wing alone configuration  Wing and tail combination	Understand about static and dynamic stability.  Derive equations for longitudinal, lateral, and directional stability for wing alone and wing tail combination
170 – 180 min	Flight Demonstration & Special Topics (Flat plate & Similar Wing-Tail flight)  Question and answers	Apply theory to practical demonstration. Preparation of flat plate wing to test glide performance and test glide performance of similar wing –Tail combination) Engage participants in Q&A and wrap-up.

**Apply for Aircraft Design Workshop:** <https://forms.gle/pBAjtvVnxUbc2S9W7>



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## ROCKETRY DESIGN WORKSHOP

2-day session covering core content: 11<sup>th</sup> & 12<sup>th</sup> April, 2026

Session 1: (3 Hours)	Duration	Topics Covered
0:00 – 0:10	10 min	<b>Introduction &amp; Workshop Overview</b> — Goals, expectations, icebreaker, and structure overview.
0:10 – 0:30	20 min	<b>Rocketry Fundamentals and History</b> — Basics of rockets, historical context, and applications; Newton's Third Law.
0:30 – 1:00	30 min	<b>Physics of Rocket Flight</b> — Application of Newton's laws, thrust vs. weight, and conceptual introduction to the rocket equation.
1:00 – 1:30	30 min	<b>Propulsion Basics</b> — Types of rocket engines (solid, liquid, hybrid), thrust generation, total impulse, and specific impulse (Isp).
1:30 – 2:00	30 min	<b>Aerodynamics &amp; Stability</b> — Forces on a rocket, CG vs. CP, fin and nose cone design, and stability margin.
2:00 – 2:30	30 min	<b>Rocket Design Parameters</b> — Mission objectives, mass breakdown, thrust-to-weight ratio, and introduction to multi-stage designs.
2:30 – 3:00	30 min	<b>Q&amp;A / Recap Discussion</b>



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Session 2 (3 Hours)	Duration	Topics Covered
0:00 – 0:30	30 min	<b>Advanced Rocket Physics</b> — Tsiolkovsky rocket equation, multi-stage rockets, and performance implications.
0:30 – 1:00	30 min	<b>Propulsion Details</b> — Model rocket motor classification (A, B, C, etc.), thrust curve analysis, and propellant comparisons.
1:00 – 1:30	30 min	<b>Aerodynamics Deep Dive</b> — Drag factors, drag coefficient, flight phases, and recovery systems (e.g., parachutes).
1:30 – 2:00	30 min	<b>Rocket Assembly &amp; Launch Readiness</b> — Hands-on overview of rocket structure, fin alignment, engine mounting, and safety checks before simulated launch.
2:00 – 2:30	30 min	<b>Simulation Software Tutorial</b> — Introduction to OpenRocket, defining rocket parts, running simulations, analyzing altitude and stability results.
2:30 – 3:00	30 min	<b>Q&amp;A</b>

Participants opting for a single technology may register via the provided link. For access to all technologies, apply through lateral entry only

**2-Day Rocketry Design Session: <https://forms.gle/zXMKbpjncP8vPiyi7>**



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दिनांक: 23 मार्च 2026

## 2-Day Defence Drone Workshop 18th & 19th April

Day - 1

### DAY 1: AERODYNAMICS & CORE HARDWARE SYSTEMS

*Focus: Engineering Fundamentals and Tactical Design*

Time Slot	Module	Key Sub-topics
00:00 - 00:45	The UAV Ecosystem	Defense classifications (HALE/MALE), Fixed-wing vs. VTOL, Global & Domestic UAV trends.
00:45 - 02:00	Propulsion & Avionic Suites	BLDC motor dynamics, ESC protocols, Li-Po/Li-Ion energy density, Flight Controller architectures (SoC).
02:00 - 03:00	Aerodynamics & Control	Bernoulli's principle in UAVs, PID tuning, Vibration isolation, and RF Telemetry links (2.4GHz / 5.8GHz / LoRa).



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दिनांक: 23 मार्च 2026

Day - 2

## DAY 2: TACTICAL INTELLIGENCE & AUTONOMY

*Focus: Mission Planning, AI, and Regulatory Compliance*

Time Slot	Module	Key Sub-topics
00:00 - 01:00	Payload & ISR Systems	Electro-Optical (EO) & Infra-Red (IR) sensors, Photogrammetry, and LiDAR integration for terrain mapping.

Day - 2

01:00 - 02:00	AI & Edge Computing	Computer Vision for target tracking, Autonomous Waypoint Navigation, and Swarm Intelligence basics.
02:00 - 03:00	Policy & Career Roadmap	DGCA Drone Rules 2021, Digital Sky, National Security Ethics, and Defense R&D career pathways.

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**2-DAY DEFENCE DRONE TECHNOLOGY :** <https://forms.gle/6H5tYw56ihsm1Z3S9>



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## 3-Day Robotics Design

1st, 2nd & 3rd May

### MILESTONE DAY WISE:

#### DAY 1 — Robotics Foundations & Hardware Layer

Duration: 3 Hours

Milestone: Build foundational understanding of robotics systems and hardware.

Time	Duration	Topics Covered
0:00 – 0:15	15 min	Introduction & Workshop Overview
0:15 – 0:45	30 min	What are Robotics? Definition, Laws, Applications
0:45 – 1:30	45 min	Robot Types (Arms, Bipedes, Quadrupeds, Wheeled)
1:30 – 2:00	30 min	Sensors Overview – IMUs, Encoders, Ultrasonic, Cameras
2:00 – 2:45	45 min	Actuators – DC, Servo, Stepper, Advanced Actuation
2:45 – 3:15	30 min	Computing Systems – MCU vs SBC, protocols
3:15 – 3:45	30 min	Hands-On: Sensor Interfacing & Motor Control
3:45 – 4:00	15 min	Q&A / Recap

#### DAY 2 — Software, Control & Project Development

Milestone: Develop ability to work with algorithms, perception & navigation.

Time	Duration	Topics Covered
0:00 – 0:30	30 min	Navigation: Path & Motion Planning
0:30 – 1:00	30 min	Perception: Object Detection, Tracking, Features
1:00 – 1:30	30 min	Mapping & SLAM Introduction
1:30 – 2:00	30 min	Real-Time Systems & Control Loops
2:00 – 2:45	45 min	ROS Basics – Nodes, Topics, Services
2:45 – 3:45	60 min	<b>Start Project 1 Build:</b> Obstacle-Avoiding Robot
3:45 – 4:00	15 min	Q&A



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## DAY 3 — ROS Practice, System Integration & Final Projects

**Milestone:** Complete two robotics projects and demonstrate autonomous behavior.

Time	Duration	Topics Covered
0:00 – 0:30	30 min	Integration Techniques & System Testing
0:30 – 1:30	60 min	<b>Complete Project 1 – Testing &amp; Optimization</b>
1:30 – 2:45	75 min	<b>Project 2 – Line-Follower Build &amp; PID Tuning</b>
2:45 – 3:30	45 min	Field Testing of Both Projects
3:30 – 4:00	30 min	Closing Feedback, Demonstrations & Certification

Participants opting for a single technology may register via the provided link. For access to all technologies, apply through lateral entry only.

**Apply : 3-Day Robotics Workshop : <https://forms.gle/89SwNtsKGQk1ahRF8>**



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## 3-Day Advanced Drone Technology (उन्नत ड्रोन प्रौद्योगिकी)

Workshop: 3-Day session: 8<sup>th</sup> , 9<sup>th</sup> & 10<sup>th</sup> May, 2026

Day	Session	Lecture Title	Topics Covered	Learning Outcome
1	1	Drone Technology Fundamentals & Aerodynamics Basics	a) UAV classifications (fixed-wing, multicopter, VTOL) b) Fundamental forces: lift, drag, thrust, weight c) Airfoil theory and pressure distribution	<ul style="list-style-type: none"><li>Identify major UAV types and their mission envelopes</li><li>Explain how airfoil geometry generates lift and influences performance</li></ul>
	2	Basic Flight Stability & PID Control Introduction	a) Angle of attack, stall behavior, stability axes b) PID control fundamentals: P, I, D terms and tuning basics	<ul style="list-style-type: none"><li>Recognize stall and recovery techniques</li><li>Configure and tune a basic PID loop to stabilize hover</li></ul>
2	1	UAV Structures, Propulsion & Power Systems	a) Drone frame materials and stress considerations b) Electric motors, propeller selection, ESCs c) Battery technologies and power budgeting	<ul style="list-style-type: none"><li>Assess structural trade-offs for weight vs. strength</li><li>Size propulsion and battery systems to meet flight-time requirements</li></ul>
	2	Sensor Suite & Inertial Navigation	a) IMU components: accelerometer, gyroscope, magnetometer b) GNSS integration and error sources c) Complementary vs. Kalman filtering basics	<ul style="list-style-type: none"><li>Integrate sensor data to produce stable attitude estimates</li><li>Calibrate IMU/GNSS to achieve reliable position and heading</li></ul>



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3	1	Autonomous Mission Planning & Advanced Control	a) Path-planning algorithms (A*, RRT) b) LQR controller design for trajectory tracking c) Real-time obstacle avoidance strategies	<ul style="list-style-type: none"><li>• Generate and optimize waypoint sequences for dynamic environments</li><li>• Implement an LQR controller to follow complex flight paths</li></ul>
	2	Real-World Applications, Certification & Case Studies	a) Industry use-cases: AAM, logistics, agriculture, healthcare, disaster relief b) DGCA/EASA certification process and airspace integration standards c) System-level testing and validation protocols	<ul style="list-style-type: none"><li>• Map technical requirements to specific industry applications</li><li>• Outline roadmap for regulatory approval and field deployment</li></ul>

**3-day training program on December 8<sup>th</sup>, 9<sup>th</sup> & 10<sup>th</sup>, 2026 (Friday–Sunday), focusing on advanced Drone Technology (Air Taxi).**

**Registration Link for 3-Day Drone** : <https://forms.gle/weWogvIVzqJqgQKp7>

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## AIRCRAFT DESIGN WORKSHOP (वायुयान डिजाइन कार्यशाला)

3-day session covering core content: 15th, 16th & 17th May, 2026

Time	Topic	Objectives
0 – 10 min	Introduction to Aircraft Design & Design Process	<ol style="list-style-type: none"><li>1. Understand the purpose and scope of aircraft design.</li><li>2. Learn step-by-step design methodology.</li><li>3. Identify trade-offs between performance, cost, and safety.</li></ol>
10 – 20 min	Velocity of Flight & Standard Atmosphere	Differentiate true, indicated and equivalent air speed & Mach number
20 – 30 min	Anatomy of the Aircraft	Identify major components (fuselage, wings, tail, landing gear, engines).
30 – 40 min	Nomenclature of Airfoil	Familiarize with standard terminology of the airfoil.
40 – 60 min	Aerodynamics of Airfoils (Velocity of Flow, Flow Pressure Distribution, Lift, Drag, Aerodynamic Centre and Centre of pressure.	<ol style="list-style-type: none"><li>1. Relate pressure distribution to lift &amp; drag generation.</li><li>2. Define and locate aerodynamic center and center of pressure.</li></ol>
60 – 75 min	Wing Geometry	Define aspect ratio, taper ratio, sweep, dihedral, twist.



# भारत अंतरिक्ष शिक्षा अनुसंधान केंद्र

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नई दिल्ली, भारत

New Delhi, India

दूरभाष : +91 7303048646

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ईमेल : info@bserc.org

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75 – 90 min	External Forces on Aircraft	Understand force balance in steady and accelerated flight and equations of motion.
90 – 110 min	Thrust Required Minimum & Power Required Minimum	Derive conditions for minimum thrust & power requirement.
110 – 125 min	Engine Sizing	Estimate engine thrust/power with aircraft mission needs.
125 – 140 min	Weight Estimation	Break down weights into empty, payload, fuel and structural weights
140 – 155 min	Range & Endurance	Derive the equations for range and endurance (Time of flight). Engage participants in Q&A
155 – 170 min	Flight Equilibrium & Stability  Wing alone configuration  Wing and tail combination	Understand about static and dynamic stability.  Derive equations for longitudinal, lateral, and directional stability for wing alone and wing tail combination
170 – 180 min	Flight Demonstration & Special Topics (Flat plate & Similar Wing-Tail flight)  Question and answers	Apply theory to practical demonstration. Preparation of flat plate wing to test glide performance and test glide performance of similar wing –Tail combination) Engage participants in Q&A and wrap-up.



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Day2 140– 180 min	1. Range & Endurance. 2. Numerical problems.	Derive the equations for range and endurance (Time of flight). Engage participants in Q&A Interpret how aerodynamic efficiency and fuel consumption influence range and endurance values.
Day3 0 – 90 min	Flight Equilibrium & Stability Wing alone configuration Wing and tail combination	Understand about static and dynamic stability. Derive equations for longitudinal, lateral, and directional stability for wing alone and wing tail combination
Day3 90 – 180 min	Flight Demonstration & Special Topics (Flat plate & Similar Wing-Tail flight)	Apply theory to practical demonstration. Preparation of flat plate wing to test glide performance and test glide performance of similar wing –Tail combination) Engage participants in Q&A and wrap-up.

Participants opting for a single technology may register via the provided link. For access to all technologies, apply through lateral entry

**3-Day Aircraft Design Session: <https://forms.gle/Mg9UHWZ98RMfmKhR6>**



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## UPCOMING EVENTS

### Bharat Def-Space Innovation Corridor 2026

National Technology Day on 11<sup>th</sup> May

Bharat Def-Space Innovation Week : 18<sup>th</sup> - 22<sup>nd</sup> August

National Space Day : 23<sup>rd</sup> August 2026

Def-Space Virtual Tech Summit: Live-stream (Zoom/YouTube); Webinars by Bharat Space Education Research Centre , Startups on Def-Space Tech : 23<sup>rd</sup> August 2026 at 11:00 AM.

**Registration Link for National Technology Day:** <https://forms.gle/yx1mXdLznQNuirLX9> ( For All )

**Apply for 1- Day Advanced Drone Technology ( Air Taxi ) Workshop:** <https://forms.gle/HbuYZR4oiGuupgQ9>

**Apply for 1-Day Artificial Intelligence Workshop:** <https://forms.gle/pBAjtvVnxUbc2S9W7>

**Apply for 1-Day Aircraft Design Workshop:** <https://forms.gle/pBAjtvVnxUbc2S9W7>

**2-DAY DEFENCE DRONE TECHNOLOGY :** <https://forms.gle/6H5tYw56ihsmIz3S9>

**Apply : 3-Day Robotics Workshop :** <https://forms.gle/89SwNtsKGQKlahRF8>

**Registration Link for 3-Day Advanced Drone Technology :** <https://forms.gle/weWogvIVzqJqgQKp7>

**3-Day Aircraft Design Session:** <https://forms.gle/Mg9UHWZ98RMfmKhR6>

**Note:** Participants are required to register through the provided link for their respective areas of interest. Tuition fees may apply, while the National Technology Day sessions will be conducted free of cost.

### Date of the Workshops:

April 4th :	1-Day Air Taxi & Advanced Drone	10: 00 AM – 1:00 PM
April 4th :	1- Day Artificial Intelligence	2:20 PM – 5:00 PM
April 5th:	1-Day Aircraft Design Workshop	
April 11th & 12 <sup>th</sup> :	2-Day Advanced Rocketry Design Workshop	
April 18th & 19 <sup>th</sup> :	2-Day Advanced Defence Drone Workshop	
May 1st, 2nd & 3 <sup>rd</sup> :	3-Day Robotics Design Workshop	
May 8th, 9th & 10th:	3-Day Advanced Drone ( Air Taxi ) Workshop	
May 15th, 16th & 17th:	3-Day Aircraft Design Technology	

**Vision of Viksit Bharat Abhiyan @2047**



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पत्रांक: 5-15(डब्ल्यू.आई.)/बी.एस.ई.आर.सी./2026/137

दिनांक: 23 मार्च 2026

To,

All the Institutions,

We are pleased to announce an important update regarding the Bharat Def-Space Innovation Corridor 2026. As part of the broader Def-Space Education and Employment for All initiative, also a series of workshops is being organised for new learners in Artificial Intelligence, Air Taxi, Aircraft Design Technology, Defence Drone Technology, Rocketry Design, and Robotics Design. In addition, dedicated workshops will be conducted to commemorate National Technology Day on 11 May 2026. The primary aim of this Corridor and Workshop is to enhance Space & Technology education and the Defence technological advancement. We kindly request all Institutions to disseminate this information widely among their Faculty/ Research Scholars and students. We are pleased to invite all students and research scholars to participate in the Innovative program. Bharat Space Education Research Centre has implemented various nationwide initiatives to promote space education at grassroots level.

**सादर | Regards,**

सेवा में,

सभी विश्विद्यालय के कुलपति ।

सभी महाविद्यालय के प्राचार्य ।

विश्विद्यालय / महाविद्यालय के शिक्षक एवं छात्र ।

निदेशक / Director

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Bharat Space Education Research Centre

भवदीय