HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
(DEEMED TO BE UNIVERSITY)

Department of Aeronautical and Aerospace Engineering

Centre of Excellence in Satellite Technology

About the Centre

At Centre of Excellence in Satellite Technology (CEST), we strive to create innovative solutions that leverage the power of space to benefit society. Our team of experts are dedicated to developing advanced satellite technologies that can revolutionize the way we live, work and communicate with each other. We are also committed to providing advanced training and research in the field of satellite technology and development, so that more people can understand and make use of the powerful tools available in this field. The centre will have Research & Development expertise in the following fields:

1. Nano Satellite
2. Mission Design
3. Nano Satellite Constellation
4. Constellation Optimization
5. Cube Sats
6. Low Earth Orbit Satellite Tracking Station
7. Precision Agriculture using space technology
8. Astronomy
9. Launch Vehicles
10. Space Habitability (Russian Collaboration)
11. Manned Space Mission (Russian Collaboration)

Objectives of CEST

A. Develop a series of nanosatellites designed to address various societal needs such as monitoring water bodies, providing emergency assistance to fishermen, mapping Earth's radiation levels, and more.

B. Showcase the ability of a low Earth orbit (LEO) satellite constellation to communicate with each other through inter-satellite communication.

C. Design and implement a range of ground-based sensors, such as asset tracking devices and sensors for monitoring water levels in ponds and establish a connection with the satellite constellation for seamless real-time data transfer.

D. Provide education and training to students in the rapidly advancing field of satellite technology.

E. Establish an in-house infrastructure for the development and testing of small satellite technology.

F. Create undergraduate (UG), postgraduate (PG), certification, diploma, PG diploma, and Ph.D. courses focused on the areas of satellite technology and space systems.

G. Initiate research and development (R&D) programs focused on the development of optimized satellite bus architecture, application-specific high-resolution payloads, and data processing applications.

H. Engage in collaboration with national and international institutions to drive technology development and establish new cutting-edge facilities.

I. Support national and global small satellite programs by offering components, subsystems, and technological assistance.

J. Establish a State-of-the-Art Ground Station for Tracking Satellites in the LEO.

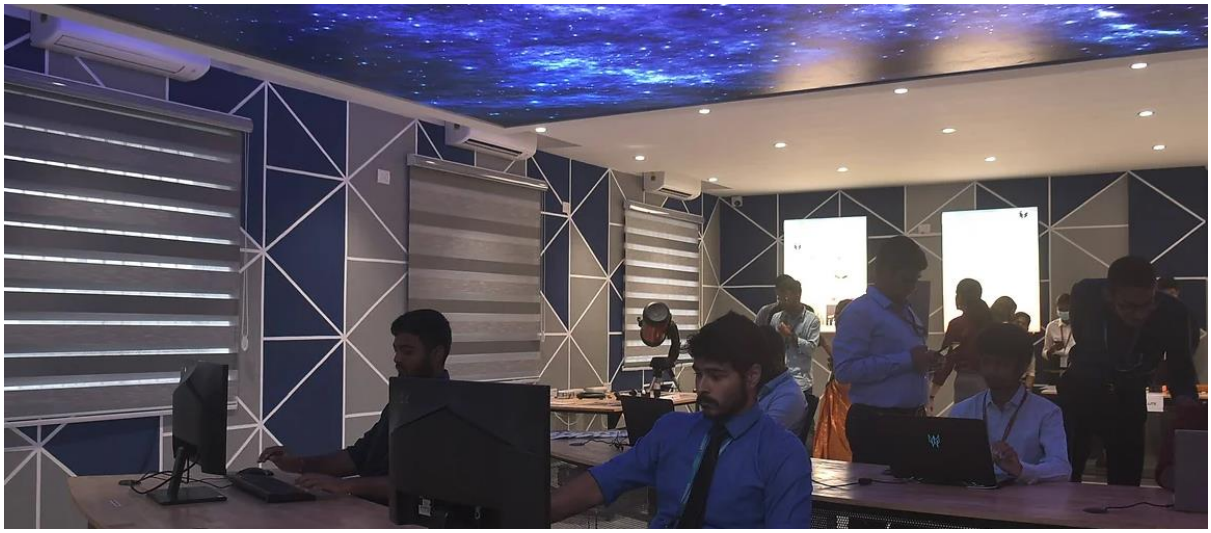
K. Partner with the International Ground Station Network and provide satellite tracking facilities for small satellites launched by educational and research institutes.

L. Encourage and support awareness and research in the field of astronomy.

KCGVERGHESESAT Project

The KCGVERGHESESAT nano satellite is equipped with the latest LoRa communication module integrated with IoT. This enables our satellite to communicate with other such satellites. This demonstration of inter satellite communication is the first among such nano satellite constellation. The advanced inter satellite communication of our satellite enables us to receive and send voice and or text data in near real time to the user. The applications of this is numerous which can be scaled as per the requirements of the end user. Some of the applications are Fisherman SoS service to alert the fishermen during natural disasters, Local water body monitoring using buoys and satellite to connect them, Agricultural yield monitoring using constellation of satellites, Asset tracking like ambulance tracking, vehicle fleet tracking etc.


INSAT – 4A



Website

https://shorturl.at/eilOV

Brochure

https://drive.google.com/file/d/1VYe3OLNXOzJgGUSwEJEkf1oxiVmnrQbb/view?usp=sharing