



# RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS OSMANIA UNIVERSITY - HYDERABAD



**One-Day Symposium on**

## CHALLENGES AND OPPORTUNITIES IN DESIGN AND DEVELOPMENT OF GNSS RECEIVERS AND THEIR APPLICATIONS IN BHARAT

**Course Code: NERTU/SC/85**

**GNSS-23-1  
16, FEBRUARY 2023**

GNSS has become a ubiquitous technology, including the sectors related to surveying, defence, unmanned vehicles, agriculture, timing & synchronization, power engineering, communication networks, IoT applications, asset and vehicle tracking, aviation, road, rail, sea transport, etc. GNSS chips are also used to know the location and time of events, sensors, and devices. Similarly, many efforts are going to develop integrated navigation for more robust and accurate autonomous navigation with GNSS and other navigation sensors.

The GNSS market is expected to grow at a CAGR of 9.02%, from \$175.19 billion in 2021 to \$320.73 billion in 2028. The business can be divided into developing GNSS chipsets and integrating GNSS chipsets with different applications. It is high time in India to build GNSS chipsets and applications with GNSS chipsets, including NavIC/IRNSS. People are also exploring developing integrated autonomous navigation even when the GNSS is unavailable or denied, or intentional or unintentional jamming and interference occur. However, developing GNSS receivers or autonomous navigation requires expertise and infrastructure facilities from multiple fields and collaboration between experts, institutions, and industries.

The main aim of the symposium is to explore the possibility of collaboration between researchers, groups, and institutions working in the GNSS area for developing GNSS Receivers and their applications. In this symposium, leading scientists/academicians/engineers working in this field will present their work briefly and their future planning. Each presentation follows a 5-10 minute discussion. The expected participants of this symposium are academicians, scientists, engineers, research scholars, UG/PG students, and managers at all levels interested in pursuing research or technology development or collaborating in the areas of GNSS and autonomous vehicles.

### Speakers, Topics, and Schedule

1. **09.00-10.30 Prof.Hari Hablani, IIT, Indore:** High-Accuracy GNSS- and NavIC-Aided Inertial Navigation of Flight Vehicles with RAIM and Segmented Dynamics.
2. **11.00-11.45 Prof.P.Laxminarayana, NERTU/OU:** GNSS/NavIC Software Receivers for Integrated Navigation, Research, Development of New GNSS signals and applications.
3. **11.45-12.30 Mr. Vinoj V Syamala, IISU/ISRO:** Acquisition and Tracking of GPS/NavIC satellites: A High dynamic case study.
4. **12.30-13.15 Dr.Anindya Bose, Burdwan University:** Experience with Compact, Low-Cost GNSS Modules for Research and Application Development
5. **14.00-14.45 Dr.Joshi Catherine, NGRI/CSIR:** Tectonic Geodesy in scaling the tectonic processes from the Earth to the Atmosphere
6. **14.45-15.30 Dr.Ashish Shukla, SAC/ISRO:** GNSS and NavIC Applications using Low-Cost Receivers
7. **16.00-16.45 Prof. Raj Kumar Pant, IIT, Bombay:** Precision Navigation System using Pseudolites Mounted on Airships
8. **16.45-17.30 Dr. Rajesh Tiwari, Nottingham University, UK:** Multi-Sensor Fusion and Integration Approach for Safe and Secure Navigation for Fully Autonomous Vehicles

**ABOUT NERTU:** The Research and Training Unit for Navigational Electronics (NERTU) was established in 1982. It is the focal point for research and training in Electronic Navigation in India. Since its inception, NERTU has successfully **executed/executing 67 sponsored consultancy projects and 84 short-term courses, conferences, and workshops** in signal processing, communications, and navigation. All the participants of the courses or funded projects are from various organizations like DRDO labs, ISRO labs, DST, MIT, ECIL, HAL, BEL, AICTE, ASL, and other R & D and academic institutions. It is the first University center to work in the area of Global Positioning System (GPS) and GPS Aided Geo Augmented Navigation (GAGAN) Systems. Recently, the NERTU team has developed a GNSS software receiver, running in real-time on a regular PC with an i7 processor. Similarly, developed the integration of NavIC with Low-cost MEMS IMU, a Speech-To-Speech Interface for Man-Machine Communication, and interested in collaborating with industries and other Research Organizations. NERTU is developing advanced algorithms/systems in the above areas in collaboration with CRL/BEL and IISU/ISRO.

**Venue** : NERTU Auditorium, OU  
(Can Join In-Person or Online)

**Time** : 09.00AM – 06.00PM

**Last Date for Registration:** 14<sup>th</sup> February 2023

**COORDINATOR, GNSS-22**

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**Interested Participants can fill the registration form at**

<https://forms.gle/9DC6sEJ4AsZMWns99>

**REGISTRATION FEE (Indian Rupees)**

Category	Fee including 18%GST
	Offline or Online
Students (Full Time)	Rs. 500/-
Faculty	Rs. 1000/-
Scientists & Engineers from R&D, Industry	Rs. 5000/-

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