



RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS OSMANIA UNIVERSITY, HYDERABAD



**4-Day Short Course on
ADVANCES IN GNSS TECHNOLOGIES & APPLICATIONS
(Course Code: NERTU/SC/69)
(16-19, AUGUST 2018)**

**One Week School on
ADVANCED GNSS SIGNAL PROCESSING
(Course Code: NERTU/SC/70)
(20-25, AUGUST 2018)**

Location : NERTU Auditorium, OU
Time : 08.30AM – 05.30PM
Faculty
Scientists and Engineers working in the area of GNSS for more than a decade in the Industry, R&D Labs and Academic Institutes, will deliver the lectures.

Registration Fee (INR) : 18%GST will be extra.

Technologies	Signal Processing	Both
Full Time Students		
3,000	8,000	10,000
Teachers		
6,000	12,000	15,000
Scientists Engineers from R&D, Industry & Commercial Organizations		
9,000	24,000	28,000

DD/Cheque should be drawn in favor of

The Director, NERTU, OU

Or online payment through NEFT to

The Director, Eqpt. Maint., NERTU, OU

A/C No. : 52198270713

IFSC Code: SBIN0020071

Osmania University Branch

State Bank of India

Last Date for Registration: 15th July 2018

For Schedule, Other Details please contact

CO-COORDINATORS, GNSS-18

Ch.Srinu, Research Scholar, NERTU, OU,

Ph. 0903 293 0657, sreenu471.ece@gmail.com

COORDINATOR:

Prof.P.Laxminarayana, Director, NERTU, OU

Ph. 0949 080 5486, laxminarayana@osmania.ac.in

Please visit website www.osmania.ac.in or <http://www.uceou.edu> for upadates like schedule, speakers and registration form.

Introduction GNSS has become a ubiquitous technology, including the sectors related to surveying, defence, unmanned vehicles, agriculture, Timing & synchronization, aviation, road, rail and sea transport. GPS chips are also proposed to use in the Applications of Internet of Things in the Industry and other organizations to know the location of sensors and devices. The demand for precise location information with the ongoing evolution of GNSS technology, is expected to grow from 5 billion to 8 billion Euros by 2020. The GNSS market from Asia Pacific for the year 2025 is expected to be 160 Million Euros from the Global market of 425 Million Euros. However at present the revenue of GNSS market is shared by few countries: USA(29%), Europe(25%), Japan(23%), China(11%) and South Korea(5%). The business can be divided into Development of GNSS chipsets and the Integration of GNSS chipsets with different applications. This is the high time in India to develop GNSS chipsets and also applications with GNSS chipsets.

4-Day Short Course on Advances in GNSS Technologies and Applications

The main objective of this course is to introduce the basic concepts and advances in the GNSS Technologies, its applications and limitations. This course will cover the topics: Principle of operation, architecture and signal structure of GPS GLONASS, Galileo, Compass and Navic; Errors in GPS or GNSS; DGSPS, augmentation systems, Applications of GNSS. specifications of a GNSS receiver, and integration of GNSS receiver or a GNSS chip with other applications.

Expected participants are working engineers, scientists, academicians, research scholars and students interested to understand the mechanism of GNSS for different applications and its limitations. **This course is open for all candidates, who are interested to develop new GNSS applications.**

One week School on Advances in GNSS Signal Processing

Though many people are using GPS or GNSS for navigation and other applications, very few people are working to develop the GNSS receivers and simulators in India. Development of GNSS receiver requires the expertise in Signal Processing, Communication and navigation algorithms. **The main objective of the course is to give the basic concepts and advances in the development of GNSS Software Receiver with emphasis on IRNSS.** The topics to be covered in the school along with hands on practice are: Basics and advances in GNSS signal processing and communication, Signal structure of GNSS systems, Overview of GNSS receiver, Antennas and front ends, Signal Acquisition, Carrier and Code Tracking, Data Processing, Navigation Solution, Kalman Filtering and assisted GPS, GNSS and INS integration.

As the course is designed with intensive practice, only the engineers, scientists, academicians, and research scholars, already working or decided to work in the development of GNSS receiver, are encouraged to register for the school. Participants are expected to have the UG level knowledge in signal processing and communication engineering. The participants have to bring their own laptop for participating in the school.

Interested candidates can download the registration form from www.osmania.ac.in or <http://www.uceou.edu> and send the filled form to the following address along with DD/Cheque, before **15th July 2018**. To **“The Co-Coordinator, GNSS-18, Research and Training Unit for Navigational Electronics (NERTU), Osmania University, Hyderabad 500007”.**

ABOUT NERTU

The Research and Training Unit for Navigational Electronics (NERTU) is established in 1982. It is the focal point for research and training in the areas of Electronic Navigation in India. It is the first University centre to work in the area of Global Positioning System (GPS) and GPS Aided Geo Augmented Navigation (GAGAN) System. Since its inception, NERTU has been conducting almost one or two short term courses per year in the area of GNSS, since 1992. Scientists, engineers, academicians and research scholars from many organisations have participated and benefited from these courses. There was very good participation in the GNSS -14, 15, 16 and 17, from many Industry, R&D academic institutes spread throughout India. NERTU has successfully **executed 60 sponsored and consultancy projects** funded by DRDO, ISRO, DST, MIT, ECIL, HAL, BEL, AICTE and ASL. It has also conducted **63 short term courses/workshops/conferences** on various topics of signal processing, communications and navigation.

4-DAY Short Course on Advances in GNSS Technologies & Applications, (16-19, August 2018) &

One Week School on Advanced GNSS Signal Processing, (20-25, AUGUST 2018)

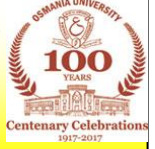
Research and Training Unit for Navigational Electronics, Osmania University, Hyderabad-500007

(TENTATIVE SCHEDULE)

	GNSS Technologies and Applications	08.30 - 10.00	10.30 - 11.45	TEA	11.45-13.00	LUNCH	14.00.15.30 Lab/Practice	TEA	16.00-17.30 Lab/Practice
Day-1 Thu 16/08		Registration & Inaugural Function	Principle and Overview of GNSS		Architecture of GNSS Systems		Signal Structure of GNSS Systems		GNSS Errors, DOP and Error Sources
Speaker									
Day-2 Fri 17/08		Differential Concepts and DGPS	Augmentations Systems with GAGAN		IRNSS/NAVIC		GNSS Receiver Basics & Practical Aspects		DEMOS
Speaker									
Day-3 Sat 18/08	Geodesy and Datums	GNSS Applications-Surveying-Geospatial	GNSS Applications- Civil Aviation	DGPS Standards	FIELD DEMOS				
Speaker									
Day-4 Sun 19/12	GNSS Applications-Defence	Development of GNSS/IRNSS applications	Development of GNSS/IRNSS applications	GNSS Market	Valedictory and Inaugural Session				
Speaker									
Day-5 Mon 20/08	GNSS Signal Processing (Advanced)	IRNSS Signal Structure and Message Content	Advances in the Signal Structure of GNSS Systems	Spreading modulations and signal mathematical representations	Receiver Overview	Generation of PRN Codes and Carrier			
Speaker									
Day-6 Tue 21/08		GNSS Antennas and Receiver front-end design	Basics of Acquisition	Advances in Acquisition	Acquisition	Acquisition			
Speaker									
Day-7 Wed 22/08		Digital Tracking Loop Design-Basics	Basics of Tracking GNSS Signals	Advances in Tracking GNSS Signals	Tracking	Tracking			
Speaker									
Day-8 Thu 23/08		Spreading Codes and characteristics Error Correction Codes	Data Decoding and Pseudo range Computation	Navigation Solutions Computation of Satellites & PVT of User	Navigation Data Decoding	Navigation Data Decoding			
Speaker									
Day-9 Fri 24/08		Computation of satellite and User Position	Modeling Errors, Scintillations, Cycle Slips	Code and Carrier Phase measurements	Navigation Solution	Navigation Solution			
Speaker									
Day-10 Sat 25/08	Basics of Kalman Filtering	Kalman Filtering for GNSS Navigation	GPS and INS Integration	Tools, Softwares and Recent Trends	Valedictory Session				
Speaker									



**RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS
OSMANIA UNIVERSITY, HYDERABAD**



<p>4-Day Short Course on ADVANCES IN GNSS TECHNOLOGIES & APPLICATIONS (Course Code: NERTU/SC/69) (16-19, AUGUST 2018)</p>	<p>One Week School on ADVANCED GNSS SIGNAL PROCESSING (Course Code: NERTU/SC/70) (20-25, AUGUST 2018)</p>
--	--

Registration Form

1. Name	
2. Designation	
3. Educational Qualifications	
4. Email	
5. Phone	
6. Organization with Address	
7. Professional Experience a. Teaching b. Research/Industry	
8. Participating Course (Tick the corresponding)	1. Advances in GNSS Technologies & Applications 2. Advanced GNSS Signal Processing 3. Both Courses
9. Registration fee a. Amount b. DD/Cheque/Online Transfer No.	
10. Signature of the Candidate	

Dr./Mr./Ms. is sponsored to attend the short course on “Advances in **GNSS Technologies & Applications**” and/or “**Advanced GNSS Signal Processing**”, to be held from **16-19 and 20-25, August 2018**.

Place:

Date:

**Signature
(Sponsoring Authority)**

The filled registration form along with DD/Cheque should be sent to the following address by **15th July 2018**.

**The Coordinator, GNSS-18, Research and Training Unit for Navigational Electronics,
Osmania University, Hyderabad – 500 007**

Email Ids/Phone Numbers for correspondence:

Ch.Srinu, Research Scholar, NERTU, OU, Co-Coordiators, GNSS-18, Ph. 0903 293 0657, sreenu471.ece@gmail.com

Registration Fee(in INR) (Includes Course material, tea, snacks and Lunch)

	Technologies and Applications	Signal Processing	Both
Full Time Students	3,000	8,000	10,000
Teachers	6,000	12,000	15,000
Scientists and Engineers from R & D, Industries and Commercial Organizations	9,000	24,000	28,000

DD/Cheque should be drawn in favour of “**The Director, NERTU, OU**” or

Online payment through NEFT to **The Director, Eqpt. Maint., NERTU, OU,**

A/C No. : 52198270713

IFSC Code: **SBIN0020071, Osmania University Branch, Hyderabad, State Bank of India**