RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS
OSMANIA UNIVERSITY, HYDERABAD

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

One Week School
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.

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. GNSS has become a ubiquitous technology, including the sectors related to aviation, defence, road, rail and sea transport, surveying, unmanned vehicles, agriculture, Applications of Internet of Things in the Industry and other organizations, Timing and synchronization applications. 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%). This revenue is expected from Development of GNSS chipsets and Integration of GNSS chipsets with different applications. However the revenue from GNSS market from Asia Pacific for the year 2025 is expected to be 160 Million Euros from the Global Revenue of 425 Million Euros. So this is the high time in India to develop GNSS chipsets and also applications with GNSS chipsets.

3-Day Short Course on Advances in GNSS Technologies and Apllications

The main objective of this course is to introduce the basic concepts of Global Navigational Satellite Systems, its applications and its limitations. This course will cover the topics: Principle of operation of GPS or any GNSS system, architecture of GPS, GLONASS, Galileo, Compass and Navic etc. Errors in GPS or GNSS, principle of operation, architecture and Signal structure of GNSSs, DGSPS, augmentation systems, WADGPS and Applications of GNSS. Basics of GNSS receiver specifications, 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 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, where lot of signal processing and communication concepts are required. Ofcourse understanding all concptes required to develop a complete GNSS system is more difficult and challenging problem. So this course will cover the basics of GNSS receiver, software receiver algorithms, integration of GPS with other navigation systems etc. **The main objective of the course is to give the basic concepts and advances in the development of GNSS Software Receiver**. The topics to be covered 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 for intensive practice,** only the engineers, scientists, academicians, and research scholars, already working or decided to work in the development of 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

		08.30 - 10.00	10.30 - 11.45		11.45-13.00		14.00.15.30 Lab/Practice		16.00-17.30 Lab/Practice
Day-1 Thu 16/08	GNSS Technologies and Applications	Registration & Inaugural Function 09.00 - 10.00	Principle and Overview of GNSS	TEA	Architecture of GNSS Systems	LUNCH	Signal Structure of GNSS Systems	TEA	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 Navigation Solutions Algorithms: Pseudo range & PVT		Data Decoding Navigation Solutions Algorithms: Pseudo range & PVT		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 in development of GNSS Receivers and Applications		Valedictory Session
Speaker									

RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS
OSMANIA UNIVERSITY, HYDERABAD

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

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 **16-1**9 and **20-25, August 2018.**

Place: **Signature**

Date: **(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-Coordinators, 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**

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