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)

IEEE HYDERABAD SECTION

Collaboration

Department of Civil Engineering, Osmania University

Location : NERTU Auditorium, OU
Time : 09.30AM – 06.30PM
Faculty
Scientists, Engineers and academicians 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

10% Discount for IETE/IEEE/ION Active Members

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: 31st July 2018

For Schedule, Other Details please contact

CO-COORDINATOR, 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 along with receipt of online payment, before **31st July 2018, to** sreenu471.ece@gmail.com and laxminarayana@osmania.ac.in or hard copy with DD/Cheque to "The **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.

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)

IEEE HYDERABAD SECTION | **Collaboration** | **Department of Civil Engineering, Osmania University**

Location : NERTU Auditorium, OU
Time : 09.30AM – 06.30PM

Faculty

1. Dr.U.N.Misra, Director, IISM,SOI
2. Dr.Arjun Singh, MD, Sakti Aviation
3. Dr.Nirvikar Dashora, NARL
4. Sri.Ramakrishna, SNIST
5. Sri. G.Sreenivasa Reddy, TRAC
6. P.Srinivasa Rao, Telangana Forest Department
7. Prof.P.Laxminarayana, NERTU,OU
8. Sri.Deepak Putrevu, SAC-ISRO
9. Sri.Avineet Shyam, SAC-ISRO
10. Sri.L.Mruthyanjaya, ISAC-ISRO

COORDINATORS: Prof.P.Laxminarayana, Director, NERTU
Ph. 0949 080 5486, laxminarayana@osmania.ac.in
Dr.R.Srinivasa Kumar, Civil Dept, OUCEA
Ph. 09491124241, rungoz@yahoo.com

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

Full Time Students	3,000
Teachers	6,000
Scientists Engineers from R&D, Industry & Commercial Organizations	9,000

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Last Date for Registration: 31st July 2018

For Schedule and other Details please contact

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Ph. 0903 293 0657, sreenu471.ece@gmail.com
Mane S R Rohith, Research Scholar,Civil Dept,OUCEA
Ph. 0910 000 0699, rohithmane9@gmail.com

Introduction

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

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RESEARCH AND TRAINING UNIT FOR NAVIGATIONAL ELECTRONICS
OSMANIA UNIVERSITY, HYDERABAD

One Week School on
ADVANCED GNSS SIGNAL PROCESSING
(Course Code: NERTU/SC/70)

(20-25. AUGUST 2018)

In Collaboration with IEEE Hyderabad Section

Location : NERTU Auditorium, OU

Time : 09.30AM – 06.30PM

Faculty

1. Dr.K.S.Parikh, SAC-ISRO
2. Prof.Sasibhushana Rao, ECE, AU
3. Dr.Arjun Singh, Sakti Aviation
4. Dr.Nirvikar Dashora, NARL
5. Dr.Susmita Bhattacharya, IIT, KGP
6. Dr.Lalitha, IIITH
7. Dr.Prasad Krishnan, IIITH
8. Dr.Nithin, BITS, Goa
9. Mr.Ankesh Garg, SAC-ISRO
10. Dr.Saumi De, SAC-ISRO
11. Mr. Parimal Majithiya, SAC-ISRO
12. Prof.P.Laxminarayana, NERTU,OU
13. Sri.L.Mruthyanjaya, ISAC-ISRO

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Last Date for Registration: 31st July 2018

For Schedule and other Details please contact

CO-COORDINATOR, 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

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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)

	9.30-1030	10.30-11.30	11.30 12.00	12.00-13.00	13.00 14.00	14.00-15.00	15.00 15.20	15.20-16.20	16.20-18.20
Day-1 Thu 16/08	Registration Inauguration	Principle and Overview of GNSS	TEA	Architecture of GNSS Systems	LUNCH	Signal Structure of GNSS Systems	TEA	GNSS Market	
Speaker		P.Laxminarayana		Arjun Singh		P.Laxminarayana		Arjun Singh	
Day-2 Fri 17/08	GNSS Errors, DOP and Error Sources	Differential Concepts and DGPS		Augmentations Systems with GAGAN		GNSS Receiver Basics & Practical Aspects		Development of Applications with GPS Receiver Chips	DEMOS
Speaker	Nirvikar	Nirvikar		P.Laxminarayana		P.Laxminarayana		Ramakrishna	
Day-3 Sat 18/08	Geodesy and Datums	GNSS Applications-Civil Aviation		GNSS Applications-Surveying-Geospatial		DGPS Standards		GNSS for Revenue Department	FIELD DEMOS
Speaker	U.N.Misra	Arjun Singh		U.N.Misra		Arjun Singh		G.Sreenivasa Reddy	
Day-4 Sun 19/08	GNSS for Weather Monitoring	Remote Sensing Applications using GNSS		Applications of GPS and GNSS in Forest		IRNSS/NAVIC		Valedictory and Inaugural Session	
Speaker	Avineet Shyam	Deepak Putrevu		P.Srinivasa Rao		L.Mruthyanjaya		L.Mruthyanjaya	
Day-5 Mon 20/08	IRNSS Signal Structure and Message Content	Advances in the Signal Structure of GNSS Systems	TEA	Spreading modulations and signal mathematical representations	LUNCH	Receiver Overview		Generation of PRN Codes and Carrier (Demo and Practice)	
Speaker	P.Laxminarayana	V.Lalitha		V.Lalitha		P.Laxminarayana		P.Laxminarayana	
Day-6 Tue 21/08	Navigation Payload: Basics, Challenges and Opportunities	GNSS Antennas and Receiver front-end design		Basics of Acquisition		Advances in Acquisition		Acquisition (Demo and Practice)	
Speaker	Parimal Majithiya	K.S.Parikh		P.Laxminarayana		Nitin Sharma		P.Laxminarayana	
Day-7 Wed 22/08	Digital Tracking Loop Design-Basics	Basics of Tracking GNSS Signals		Error Correction Codes		Tracking (Demo and Practice)			
Speaker	Ankesh Garg	Ankesh Garg		Prasad Krishnan		P.Laxminarayana			
Day-8 Thu 23/08	Advances in Tracking GNSS Signals	Data Decoding and Pseudo range Computation		Navigation Solutions Computation of Satellites & PVT of User		Navigation Data Decoding (Demo and Practice)			
Speaker	Susmita Bhattacharya	Saumi De		Saumi De		P.Laxminarayana			
Day-9 Fri 24/08	Modeling Errors, Scintillations, Cycle Slips	Code and Carrier Phase measurements		Integration Framework of All modules		Navigation Solution (Demo and Practice)			
Speaker	Nirvikar Dashora	Nirvikar Dashora		P.Laxminarayana		P.Laxminarayana			
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	Sasibhushana Rao	Sasibhushana Rao				P.Laxminarayana			

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)

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. Details of DD/Cheque/Online Transfer	
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: **Signature**
Date: **(Sponsoring Authority)**

The filled form along with receipt of online payment should be sent, before **31st July 2018**, by email or hard copy with DD/Cheque to **"The Coordinator, GNSS-18, Research and Training Unit for Navigational Electronics (NERTU), Osmania University, Hyderabad 500007".**

Email Ids/Phone Numbers for correspondence:

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Prof.P.Laxminarayana, Coordinator, GNSS-18, **Ph. 0949 080 5486,** laxminarayana@osmania.ac.in

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**
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