



Centre for Space Science and Technology Education in Asia and the Pacific

ANNOUNCES

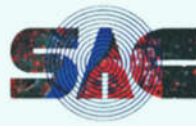
Short Term Online Course

On

GNSS: ADVANCED TECHNOLOGIES AND APPLICATIONS

28th November – 08th December, 2023

Conducted by



Space Applications Centre
Indian Space Research Organisation
Ahmedabad, INDIA



Organized by



Centre for Space Science and Technology Education in Asia and the Pacific
(Affiliated to the United Nations)

IIRS Campus, 4 Kalidas Road,
Dehradun, INDIA





Short Course on GNSS: Advanced Technologies and Applications

Background

Satellite Navigation, or precisely the Global Satellite Navigation System (GNSS), has extended its footprints today in every walk of life. Today, it not only has become an easy and standard way for navigation, but with the development in advanced technology and more accurate and precise positioning in offer, GNSS is being used in varied fields of scientific, societal and strategic applications. Further, in addition to the legacy global navigation systems of GPS and GLONASS, countries like India, China, Japan and European Union have also come up with their Navigation Satellite Services. These initiatives have increased the satellite navigation users and applications in manifold.

A large community of the users are utilizing GNSS in precise applications like surveying, critical applications, in addition to newer applications including celestial navigation, entertainment, etc. for which advanced technology with differential and augmentation formats of GNSS are essential. However, the related technology is progressing at a very fast rate, creating a large gap between the technology development and relevant capacity building of user communities. This gap can be bridged by training the professionals, researchers and user groups at different levels by transferring knowledge and awareness about the state of art technology.

India is on the verge of operationalizing its own regional satellite navigation system, NavIC (Navigation with Indian Constellation), which is designed and developed by ISRO. NavIC has L5 and S band services in SPS while services in L1 band is likely to be offered soon. Towards this, the Government of India has recently announced that it will be mandatory for all smartphones operating in India to support NavIC by the end of 2025.

Keeping this requirement in view, Space Applications Centre, ISRO, will be conducting an online course in Satellite Navigation, under the aegis of the Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), which is affiliated to the United Nations (UN). The course is titled '**GNSS: Advanced Technologies and Applications.**'

The course will be targeted for the middle level professionals, decision makers and advanced research students and will focus on prime areas like basic foundations, relevant technologies and related applications. The duration of the course is 2 weeks, i.e., 10 working days, starting from 28th November, 2023 and closing on 08th December, 2023.

The course is designed to serve the end objective of providing a strong concept and a level of knowledge to the participants. This will be oriented towards technical value additions leading to individual professional growth, better decision-making power and capacity building, as a whole.



Course Objectives

The overall objective of the 10 days training course is to introduce the concepts of the existing technology related to the Advanced GNSS Receiver Technology, Augmentation systems and Applications among users, researchers, professionals, decision-makers and academicians. The participants will be introduced and familiarized with the relevant topics of the subject with which they shall be able to –

- (i) know the background of these developments*
- (ii) understand the architectures and working principles of these advanced systems along with algorithms for the relevant applications*
- (iii) understand data types and data handling during hands-on sessions*
- (iv) become acquainted with the performances and vulnerabilities of the systems and applications*
- (v) be readied for comprehensive courses on GNSS.*

The teaching faculty is selected from the most experienced and acclaimed scientists and engineers from the ISRO having vast experience in the field. The participants will be conferred with a participation certificate upon successful completion of the course.

Course Contents

The complete course of 10 days' duration will have two parts; the lecture course, dealing with the theoretical context & the experimental part, where the participants will work on relevant goals with the real data by themselves. The contents of the course are highly integrated and designed to highlight the key aspects.

- Week 1-** *Foundations of Navigation, architecture, signals, positioning algorithms, errors and performance, etc.*
- Advancement in Space Segment, hybrid constellation, MBOC signals and Interoperability, Signal authentication, etc.*
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- Week 2 –** *Advanced Receivers, Anti Jamming and Anti spoofing receivers, etc. Augmentations, CORS, PPP, RTK, Operational aspects and protocols etc.*
- Advanced NavCom Applications, GEO SSV and beyond, GNSS for advanced scientific uses etc.*
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Useful Information

Course Details

Course format:	Online
Number of Seats:	50
Course Fees:	Nil

Selection

Announcement:	06 October, 2023
Opening of Application Submission:	07 October, 2023
Closing of Application Submission:	15 November, 2023
Selection Results:	21 November, 2023

Course Dates

Course Starts:	28 November, 2023
Course Ends:	08 December, 2023

Who should apply:

This course is suitable for middle level professionals wishing to have a detailed and updated knowledge on the Advanced GNSS Receiver Technology, Augmentation systems and Applications and on the related data processing techniques and performances. The candidates may include

- *Designers, Developers and Service engineers in Navigation and Communication area*
- *Technical executives and decision makers in this area*
- *Advanced Students, Researchers, and faculties from relevant field*
- *Any other having basic background knowledge on GNSS principles and operations*

Candidates must have Bachelor's degree in Electronics/Telecommunications/Electrical Engineering/Computer Science or Master's degree in Physics or equivalent with at least 5 years of professional experience in related field of work. The candidate must be nominated by the organization. For candidates with higher educational qualification, the minimum work experience may be relaxed.

How to Apply:

Application procedure is completely online. Interested candidates are required to visit the CSSTEAP admission portal <https://cssteapun.org/admissions> for applying to this course and follow the procedure provided there. In case of any difficulties while submitting online application form please e-mail at websupport@iirs.gov.in.





About CSSTEAP:

CSSTEAP was established in India in November 1995 with its headquarters in Dehradun and over the past 28 years, it has emerged as a Centre of Excellence in capacity building in the field of space science and technology application. The CSSTEAP programs are conducted by Department of Space at campuses namely, Indian Institute of Remote Sensing (IIRS), Dehradun, Space Applications Centre and Physical Research Laboratory, Ahmedabad and UR Rao Satellite Centre, Bengaluru and are executed by the faculty, who are the scientists of these centres. The training programs include PG and Short Courses on RS & GIS, Satellite Communications, Satellite Meteorology and Global Climate, Space & Atmospheric Science, Global Navigation Satellite Systems, Small Satellite Missions and DRR regularly. Currently, a new CSSTEAP course on Remote Sensing Data Processing has been introduced by CSSTEAP. Besides this, many short courses, webinars, MOOC and workshops on various themes are also organized. For more information, visit www.cssteapun.org.

About SAC

Space Applications Centre (SAC), located in Ahmedabad, India, is one of the major centres of the Indian Space Research Organization (ISRO). This centre is engaged in the research and development of applications of Space Technology in the field of Communications, Remote Sensing, Meteorology, planetary science and Satellite Navigation. It has major contributions in the recent Chandrayaan-3 mission, that demonstrated soft landing on moon. The other achievements of the centre include development of communication, navigation and meteorological payloads and designing various applications. SAC provides its infrastructure to conduct training courses to the students of CSSTEAP and will be the host centre for this course. For more information on SAC, visit www.sac.gov.in

Contact Us

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