

# UTOKYO/ICG Training on Global Navigation Satellite Systems (GNSS)

## 1 Program Name

UTOKYO/ICG Training on Global Navigation Satellite Systems (GNSS). This program is jointly organized by the Centre for Spatial Information Science (CSIS), The University of Tokyo (UTokyo), Japan and the International Committee on Global Navigation Satellite Systems (ICG), United Nations Office for Outer Space Affairs (UNOOSA), Vienna, Austria.

## 2 Organizers

- Centre for Spatial Information Science (CSIS), The University of Tokyo, Japan
- International Committee on Global Navigation Satellite Systems (ICG), Office for Outer Space Affairs (UNOOSA), Vienna, Austria

## 3 Local Organizer

- Center for Space Science and Geomatics Studies (CSSGS)  
Pashchimanchal Campus, Tribhuvan University, Pokhara, Nepal
- Institute of Engineering (IOE), Pulchowk Campus, Tribhuvan University, Lalitpur, Nepal

## 4 Program Overview

This training program focuses on introduction to GNSS and GNSS data processing.

After the training, the participants will be able to process GNSS data for high accuracy.

Key features:

- Understand GNSS data types, GNSS errors, coordinate systems and applications.
- GNSS High-Accuracy data processing methods using RTK and MADOCA PPP.
- Learn RTKLIB for high-accuracy GNSS data processing.
- Use Low-Cost GNSS receiver system data.
- Use of Android devices to log GNSS data for high accuracy.

## 5 Venue:

The training will be held at Institute of Engineering, Pulchowk Campus, Tribhuvan University, Lalitpur, Nepal. Lalitpur also known as Patan is a city next to Kathmandu.

## 6 Course Name, Schedule and Requirements

	Course Name	Days	Dates	Target Participants	Pre-Requisites for Participation
1	UTOKYO/ICG Training on Global Navigation Satellite Systems (GNSS)	5	12 – 16 February 2024	Anyone who is interested in learning GNSS technology and data processing.	Online study of GNSS material published at item 16.

## 7 Number of Participants

The maximum number of participants will be limited to 50.

- On-Site Participants (International) : 20 – 30
- On-Site Participation (Domestic) : 20 – 30

## 8 Mode of Training

The training program will be conducted on-site only. However, the conduction of the on-site program will highly depend on the local COVID-19 situation and restrictions. All necessary actions will be taken to maintain the recommended procedures against COVID-19. The on-site program may be canceled and changed to online depending upon the COVID-19 situation. This will be decided at least 2 weeks before the event.

## 9 International Participants

Neither the organizers nor the local host will be responsible for any situations such as travel restrictions or cancellation of flights that may arise due to COVID-19 situation. It is the participant's sole responsibility to prepare for his or her own travel.

## 10 Travel Funding

Limited travel funding will be provided by ICG to eligible participants. The funding covers only two-way economy-class air travel between the participant's nearest international airport and Kathmandu International Airport.

All other expenses (hotel, insurance, and daily expenses for food etc.) must be paid by the participant. The local organizers will provide logistics support related to visa, hotel booking and other transport-related matters. However, all the costs shall be paid by the participants.

## 11 Important Dates

- Application Deadlines: **15<sup>th</sup> December 2023 (with travel funding)**  
12<sup>th</sup> January 2024 (without funding)

## 12 Link to Online Application

<https://forms.gle/TTHRWTQSWrmVicfdA>

### 13 Pre-Requisite

This training program requires certain prerequisites to participate. The prerequisite materials (see 16 below) will help you to understand the basics of GNSS. This will also make you familiar with necessary GNSS data, data formats and data processing tools. During the training, the basics of technology will be explained and more time will be allocated to learn about GNSS data formats and data processing for high-accuracy.

All participants must bring their own computer for GNSS data processing.

### 14 Hands-On Exercise

Arrangements will be made for several units of different types of Low-Cost GNSS receivers including access to continuously operating reference stations (CORS) for various types of data processing. Several sample GNSS data sets for static and dynamic observation will be provided.

### 15 Online Access to Receiver

UTokyo will arrange online real-time access to different types of GNSS receivers located in Japan as well as in Nepal for training and hands-on exercise. The available receivers are Trimble NetR9, Septentrio PolaRx5, Septentrio MOSAIC, U-Blox F9P/M8T, MADOCA Receiver and Sony SPRESENSE. This will provide many opportunities to work with different types of data sets.

### 16 Reference Links:

UTokyo HP: [https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS\\_Train.htm](https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS_Train.htm)

ICG Information Portal: <https://www.unoosa.org/oosa/en/ourwork/icg/activities.html>

# Workshop on Global Navigation Satellite Systems (GNSS) for Policy and Decision Makers

## 1 Program Name

This is a workshop on Global Navigation Satellite Systems (GNSS) for policy and decision makers jointly organized by the Centre for Spatial Information Science (CSIS), The University of Tokyo (UTokyo), Japan and the International Committee on Global Navigation Satellite Systems (ICG), United Nations Office for Outer Space Affairs (UNOOSA), Vienna, Austria.

## 2 Organizers

- Centre for Spatial Information Science (CSIS), The University of Tokyo, Japan
- International Committee on Global Navigation Satellite Systems (ICG)/Office for Outer Space Affairs, Vienna, Austria

## 3 Local Organizer

- Center for Space Science and Geomatics Studies (CSSGS), Pashchimanchal Campus, Tribhuvan University, Nepal
- Institute of Engineering (IOE), Tribhuvan University, Nepal

## 4 Program Overview

GNSS is widely used in applications that require location and time data. This workshop focuses on the introduction of GNSS and its benefits in various applications such as infrastructure, survey and mapping, supply-chain analysis, traffic congestion analysis, early warning system and disaster mitigation, time synchronization of telecom and finance systems, security, safety and legal sectors.

This workshop will help the participants to have general knowledge of GNSS technology, its applications in various sectors, system types, costs, and necessary resources for implementation.

Key features:

- Understand GNSS systems and service types
- GNSS applications in various sectors
- GNSS receiver systems and receiver selection guidelines
- Low-Cost GNSS receiver systems and use of smart-phones to collect GNSS data
- Signal security and spoofing issues

## 5 Venue:

The training will be held at Institute of Engineering, Pulchowk Campus, Tribhuvan University, Lalitpur, Nepal. Lalitpur also known as Patan is a city next to Kathmandu.

## 6 Course Name, Schedule and Requirements

	Course Name	Days	Dates	Target Participants	Pre-Requisites for Participation
1	Workshop on GNSS for Policy and Decision Makers	3	12 – 14 February 2024	Personnel at the management level	Online study of GNSS material published under item 13

## 7 Number of Participants

The maximum number of participants will be limited to 40

- On-Site Participants (International) : 10 - 20
- On-Site Participation (Domestic) : 10 - 20

## 8 Mode of Training

The training program will be conducted on-site only. However, the conduction of the on-site program will highly depend on the local COVID-19 situation and restrictions. All necessary actions will be taken to maintain the recommended procedures against COVID-19. The on-site program may be canceled and changed to online depending upon the COVID-19 situation. This will be decided at least 2 weeks before the event.

## 9 International Participants

Neither the organizers nor the local host will be responsible for any situations such as travel restrictions or cancellation of flights that may arise due to COVID-19 situation. It is the participant's sole responsibility to prepare for his or her own travel.

## 10 Travel Funding

Travel funding is not available for this workshop. All expenses (air-fare, hotel, insurance, and daily expenses for food etc.) must be paid by the participant.

The local organizers will provide logistics support related to visa, hotel booking and other transport related matters. However, all the costs shall be paid by the participants.

## 11 Important Dates

- Application Deadlines: 12<sup>th</sup> January 2024

## 12 Links to Online Registration

<https://forms.gle/9ojstsymN3GWwvDB9>

## 13 Pre-Requisite

It is recommended that the participants prepare themselves with the prerequisite materials (see **Error! Reference source not found.** below) for a better understanding of the basics of GNSS. This will also make you familiar with necessary GNSS data, data formats, data processing tools and keywords that are used by the GNSS community.

UTokyo HP: [https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS\\_Train.htm](https://home.csis.u-tokyo.ac.jp/~dinesh/GNSS_Train.htm)

ICG Information Portal: <https://www.unoosa.org/oosa/en/ourwork/icg/activities.html>