JADAVPUR UNIVERSITY
COMPUTER AIDED DESIGN CENTRE
Faculty Council of Engineering and Technology
Kolkata - 700 032

Certificate course on
GNSS Surveying and Mapping with Android Phones

GNSS is the standard generic term for satellite navigation systems (such as GPS, GLONASS, etc.) that provide autonomous geospatial positioning information with global coverage. The rapid progress and increased visibility of GNSS has been made possible by paradigm shift in the areas of computer technology, computer science, and software engineering, as well as mobile phone technology.

Nowadays every smartphone carries a GNSS receiver that supports one or more GNSS constellations. The inclusion of a GNSS receiver in smartphone is primarily targeted for navigation. However, the applications have been extended further for tracking, emergency response, and even for survey. The smartphone GNSS receivers, although not very precise, can become a low cost solution for GIS survey. We can even connect high precision receivers with the smartphone through Bluetooth. Several apps have been developed to support survey and GIS data collection and tracking in mobile phones; some of them are even absolutely free. In this certificate course one will learn how to use their Android phones for surveying and mapping. Theoretical concepts of GNSS, planning a GNSS survey, etc. will also be addressed. This course has been designed primarily for the research scholars, teachers, working persons, field surveyors or others who want to be able to grasp the fundamentals of GNSS and surveying/mapping in Android based mobile phones in a very short duration.

The CAD Centre is the pioneer institute in the field of Geoinformatics and GNSS Survey. It maintains a state-of-the-art infrastructure for its courses. The Centre has engaged highly experienced faculty members from the academic sector as well as industry. Some of our faculty members are well known figures in the field of GNSS and have published a huge number of books, monographs, and research articles internationally.

Course Duration: 18 hrs

Class Duration: Theory Sessions: 2 hrs each; Practical Sessions: 2 hrs each

Eligibility: BE/BTech in Engineering or equivalent; BSc in any discipline; BA/B.Sc. in Geography/Environmental Studies; 3-years Diploma in Engineering. All should have practical knowledge of GIS.

Participants must have mobile devices running Android 4.0.3 or above; laptop/desktop computer with Windows; and stable internet connectivity. Google Meet should be preinstalled on the mobile device.

Syllabus:

Topics	No. of Theory Classes	No. of Practical Classes	Total No. of Classes
GNSS *Technology:* Introduction, Basic concept of GNSS technology (GNSS constellation), Segments of GNSS, Working Principle of GNSS (trilateration, timing and ranging and calculating location), GNSS Signals, GNSS Errors and Accuracy Issues, Positioning Methods, Introduction to DGNSS, GNSS Applications.	4	-	4
Practical on GNSS: i) Planning a survey and testing the performance of Android devices. ii) Application Interface, File Formats. iii) Projects, Layers (symbology & attributes) and Templates creation. iv) Drawing, Recording (features, tracks, images), Editing. v) Sharing and Exporting (projects, templates, shapefiles, kml), Uploading to FTP Servers.	-	5	5
Total	4	5	9

Certificate: Completion certificate (in printed form) will be provided at the end of the course.