

Advanced GPS Control Network Survey and QC Course

Venue Information

Venue: London UK

Place:

Start Date: 2025-09-29

End Date: 2025-10-03

Course Details

Net Fee: £4750.00

Duration: 1 Week

Category ID: CACETC

Course Code: CACETC-57

Syllabus

Course Syllabus

Introduction :

In the ever-evolving world of geospatial technology, the precision, reliability, and efficiency of data collection are paramount. As a foundational pillar of modern geomatics, the Global Positioning System (GPS) has revolutionized the way we capture, analyze, and interpret spatial data. Whether we're mapping continents or planning local infrastructure projects, GPS stands at the heart of our operations.

Welcome to the "Advanced GPS Control Network Survey and QC" course, a comprehensive deep dive into the advanced techniques and methodologies behind GPS control network surveys. Over the next five days, participants will journey through the intricacies of GPS technology, from the foundational principles to the nuanced methodologies in control network design and quality control.

This course aims to equip attendees with an enriched understanding of GPS surveying techniques, data processing, and quality assurance protocols. Beyond the theoretical discussions, we will delve into real-

enhance data quality, or a project manager craving for operational excellence, this course has something to offer. Let's embark on this enlightening journey, exploring the world through the lens of advanced GPS technology.

The Course Outline:

Day 1: Introduction and GPS Fundamentals

Course Overview & Objectives

- Participant introductions
- Expectations and objectives

GPS Technology Overview

- History of GPS
- How GPS works
- GPS segments: space, control, and user

GPS Signal Structure and Satellite Systems

- GPS signal components
- Global Navigation Satellite Systems (GNSS) comparison: GPS, GLONASS, Galileo, BeiDou, etc.

Fundamentals of Positioning

- Triangulation principle
- Position determination methods: absolute vs. relative

Day 2: Control Networks and GPS Surveying Techniques

Introduction to Control Networks

- Definition and purpose of control networks
- Hierarchies and types of control points

GPS Control Network Design

- Considerations for control network design
- Influence of control network geometry on positioning quality

Static GPS Surveying

- Procedure and equipment
- Data processing and analysis

Kinematic & RTK GPS Surveying

- Concepts and applications
- Procedure, advantages, and limitations

- Atmospheric errors: ionosphere and troposphere
- Receiver and multipath errors

Advanced Data Processing Techniques

- Ambiguity resolution
- Use of software for GPS data processing

Quality Control (QC) in GPS Surveying

- Importance of QC
- QC procedures and checks for GPS surveys

Day 4: Geodetic Systems and Transformations

Basics of Geodetic Systems

- Ellipsoid vs. geoid
- Commonly used geodetic systems

Coordinate Transformations

- Basics of coordinate transformations
- Datum shifts and transformations
- Software and tools for transformations

Integration of GPS with Other Surveying Technologies

- Total stations, LiDAR, and drones
- Benefits and considerations

Day 5: Practical Exercises and Case Studies

Hands-on GPS Data Collection

- Setup and field procedures
- Data downloading and preliminary checks

GPS Data Processing

- Using specific software tools for post-processing
- Resolving common issues and errors

Case Studies

- Review of real-world scenarios and projects
- Lessons learned and best practices
- Course Recap and Feedback
- Summary of main topics covered
- Q&A session

