



# Advanced GPS Control Network Survey and QC Course

## Venue Information

---

**Venue:** London UK

**Place:**

**Start Date:** 2026-01-20

**End Date:** 2026-01-24

## 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-

enhanced data quality, or a project manager striving 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

