

Introduction to Hydrometry

Duration: 1 day

Synopsis

This course is intended for water engineers and managers, water resources practitioners, hydrologists, modellers, flood alleviation engineers and other users of hydrometric data. The course is classroom based and provides an introduction to open channel flow and other hydrological data collection techniques. The course will explain the basic principles of measurement, applications and site selection, the attributes, limitations and uncertainties of hydrometric data.

Prerequisites

No prior knowledge of hydrometry is assumed but some basic knowledge of hydrology and basic open channel hydraulics would be an advantage.

Outcomes

After taking this course, delegates should have a basic understanding of rainfall, water level and flow monitoring, along with an appreciation of the problems of collecting, and the uncertainties associated with hydrometric data.

Content

The course will teach the methods of monitoring rainfall, water level in both rivers and boreholes and determining flow. The advantages and limitations of the techniques, instruments and methods will be considered, together with associated uncertainties. Where relevant, reference will be made to British, European and International Standards. Rainfall monitoring will consider manual and recording raingauges, together with siting and network considerations. All commonly used types of water level sensor will be described, as will their attributes and potential applications. Continuous flow measurement techniques to be considered will include structures (weirs and flumes), rated sections and acoustic and electromagnetic methods. Several methods of gauging will be taught, including the techniques of current meter gauging, ADCP and dilution gauging. The course will be rounded off with a session on quality assurance, uncertainties and performance checking and calibration.

The course programme covers:

- Rainfall monitoring
- Water level monitoring
- Continuous flow measurement: Stage-discharge techniques – rated sections and structures
- Continuous flow measurement: Acoustic and electromagnetic technologies
- Instantaneous/spot flow measurement (gauging) techniques
- Standardisation of flow measurement techniques and quality assurance
- Performance checking, calibration and uncertainties

The course will demonstrate the main types of information required by hydrologists, how it is collected and associated limitations. Topics will be illustrated using a range of examples, showing the main techniques and their application under a wide range of field conditions.