

Field Hydrometry - Introduction

Duration: 2 days

Synopsis

This course is intended for hydrologists, water resources and environmental practitioners who are required to undertake basic hydrological monitoring. The course will cover methods of open channel measurement with particular emphasis on the theory and practice of current meter gauging, water level and rainfall measurement and an introduction to stage-discharge relationships. The course consists of a mixture of classroom and field training.

Prerequisites

No prior knowledge of hydrometry is necessary but some basic knowledge of hydrology would be an advantage.

Outcomes

After undertaking this course, delegates should have a basic understanding of fundamental field hydrometry. In particular they should be able to undertake a current meter gauging by wading. They should also be able to determine discharge from current meter gauging field data and the associated uncertainties. In addition they will have a fundamental understanding of water level measurement including the selection of sensors, rainfall measurement, methods of open channel flow measurement and basic stage-discharge concepts.

Content

The course will teach the velocity-area method of open channel flow measurement, including a resume of all associated techniques and technologies in common use. The theoretical basis of the velocity-area method will be used to illustrate good current meter gauging field practice, including site selection and sampling strategies. The main types of current meter will be compared and meter calibration methods described. Instruments for measuring river stage (water level) will be explained, together with the development of rating equations that describe the stage discharge relationship. The field element of this course will put these techniques into practice, collecting gauging and associated survey data on a local river. Delegates will calculate flow from their gauging data. Issues arising from the fieldwork will be discussed, with particular reference to uncertainties in flow determinations and health & safety. The course will also cover the monitoring of rainfall using storage and recording raingauges, including site selection, set-up requirements and the recording of data.

The course programme covers

- Velocity area method
- Techniques for determining discharge using the velocity area method
- The principles and practice of current meter gauging
- Computational techniques for calculating flow, including uncertainties
- Measurement of river stage
- Introduction to stage-discharge relationships
- Rainfall measurement using standard storage gauges and tipping bucket raingauges
- Rainfall gauge site selection and set-up requirements

Tuition will use a hands-on approach, with no more than six participants per tutor. The main features of each topic will be explained and discussed with delegates. Techniques will be consolidated during the fieldwork, after which data will be processed and issues discussed further.