

## L3-SURVEYING EQUIPMENT

### FIVE-DAY COURSE

**THIS COURSE IS A COMBINATION OF OUR LEVELLING AND TOTAL STATION COURSES AND IS DESIGNED FOR PEOPLE SUCH AS ARCHITECTS, ENGINEERS, PLANNERS, ENVIRONMENTAL WORKERS AND THOSE WHO MIGHT WISH TO GO ON TO TRAIN AS SURVEYORS AND WHO NEED TO BE ABLE TO TAKE LEVELS USING A LEVEL INSTRUMENT AND STAFF AND ALSO TO HAVE AN INTRODUCTION TO MEASUREMENT WITH A TOTAL STATION INSTRUMENT.**

This course takes the student through the theory and practice of levelling from finding elevations to checking the level instrument.

The student is also taught to set up and operate a Total Station and to measure the co-ordinates and elevations of points which he or she requires in order to plot a plan drawing and to measure the position of new points.

Candidates are not required to have any previous experience of using survey equipment prior to attending the course, but it is generally an advantage if the delegate has had some exposure to site conditions as he or she will then have a better appreciation of what is required.

Only very basic mathematics is required for this course as all the calculations are carried out by the Total Station or computer. However every student should have a scientific calculator for the course.

### OUTLINE OF THE MAIN TOPICS COVERED ON THE COURSE

- Using a scientific calculator.
- Basic understanding of the metric system and angular measurement.
- Principles of levelling and levelling equipment.
- Practical levelling to find the elevation of a new point.
- Practical levelling to find the elevations of intermediate and inverted points.
- Checking the level instrument for collimation error and adjusting.
- Theory of setting-out profiles to the required level.
- Setting up an instrument over a known point.
- The Total Station – what it does and how to operate it.
- The Total Station – settings and corrections.
- Using the Total Station – starting a new job, entering known station co-ordinates and co-ordinates for setting-out.
- Using the Total Station – setting and measuring angles.
- Using the Total Station – measuring distances.
- Recording a survey by hand.
- Understanding the use of codes for surveyed points.
- Carrying out a topographical field survey.
- Downloading and plotting the survey on computer. (Please note that the use of the computer software is demonstrated, but not taught on this course).
- Using the Total Stations built-in functions.
- Using the Total Station – finding the instrument position by free-station (resection) from know points.
- Setting station co-ordinates, back-sight station and bearings.