

# ENGINEERING TRIPOS Part IIA

## Extension Activity: SURVEYING

Open to all, recommended for Civil, Structural and Environmental Engineering



A former CUED student putting his skills (and the Department's equipment) to use on an expedition to Greenland, measuring glacier movement

### INTRODUCTION

Land Surveying (now sometimes called Geomatics) covers important skills for all civil engineers – Surveying ensures that roads, buildings, tunnels and bridge foundations are built in the correct place. Many other engineering students find Surveying both interesting and useful, for example, through its close relationship with mapping and satellite navigation systems.

This ExA gives a basic grounding in Surveying. Students may then opt to apply the skills gained through IIA projects in the Easter Term (Constructionarium or River Hydraulics & Surveying). Students who do not take this ExA still have the opportunity to learn the same Surveying skills via the IIA Surveying project in the Easter Term.

### OBJECTIVE

The purpose of this ExA is to learn how to use surveying instruments and techniques to establish the accurate positions (National Grid co-ordinates, and heights above the sea level datum) of existing survey stations on Coe Fen, and then to set out additional points at predetermined positions. Topics covered are:

- 1 Principles of Surveying
- 2 Basis of the Ordnance Survey National Grid
- 3 Use of instruments: “total station” (theodolite + distance measurement), optical level
- 4 Fieldwork skills: planning and execution of traversing, leveling, setting out
- 5 Associated computing of positions, and adjustment of errors

### ARRANGEMENTS

Students work in groups of 4 - 6, and the course takes place over a continuous 2½ day period **after the end of lectures in the Lent Term**: 2pm - 6pm on the last Wednesday, 9am - 6pm on Thursday, and 9am - 4pm on Friday. If the numbers exceed capacity, an additional course will run at the end of the Michaelmas Term (though this is rarely needed).

Booking for the Surveying course is conducted online (see IIA Teaching pages). Please send any enquiries to Dr. Dongfang Liang ([dl359@cam.ac.uk](mailto:dl359@cam.ac.uk), 01223 764829).