

Milking a Rich Education from an Old School Technique

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SUMMARY

Second year surveying students at UNSW are exposed to a lot of field work which becomes progressively more complex as the year progresses. Most tasks are performed on campus for convenience and safety but the penultimate practical exercise in a term 3 course asks students to self-organise and plan their own logistics. GMAT2120 – Surveying and Geospatial Technology runs 6 separate field practical exercises focusing on digital levelling, total stations, leapfrog EDM height traversing and EDM distance measurement. The course culminates with a compulsory practical exam.

Long line EDM baseline measurement has been mostly replaced by GNSS rapid static or RTK techniques. However, to really understand deeply all the factors contributing to high precision distance measurement, a simple field practical has been devised, conveniently located on the beautiful Sydney coastline, just a few kms from UNSW main campus.

In lectures, students learn the theory of how an EDM works (both phase and pulse method), refractive index and the impact of atmospheric conditions on the length of a line. The practical exercise simply measures long lines (3, 6 and 9 km) between trigonometric stations located on the cliffs. All are intervisible. Students set their instruments to 0 ppm, measure temp/ pressure and apply corrections manually. They reduce their distances to the ellipsoid and project onto the grid and compare with the join derived from given state government coordinates. It is a simple task but so much learning can be derived from this one small exercise.

This paper seeks to deconstruct the various learning elements to encourage new and experienced surveying educators a fun way to engage students, provide a rich educational experience and a thoroughly enjoyable exercise as well.

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