Module Title: 3A1 Engineering Surveying

Code: CE3A1

Level: Junior Sophister

Credits: 5

Lecturer(s): Assistant Prof. Brian Caulfield (brian.caulfield@tcd.ie)

Module Organisation

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<tr>
<th>Semester</th>
<th>Start Week</th>
<th>End Week</th>
<th>Associated Practical Hours</th>
<th>Lectures</th>
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Total Contact Hours: 62

Module Description
Engineering surveying is a single semester Module developing a foundation understanding of the principles of surveying, intermediate knowledge of the methods and procedures used on site, and hands-on familiarity with a full range of surveying instruments and equipment.

The intention of the Module is that students will be able to design and manage surveying projects within a wide range of situations that may be encountered in construction, local authority and general industry, and apart from the intended outcome of plan production or setting out they will be able to analyse for possible errors in both the instrumentation and the methods used.

Learning Outcomes
On completion of this Module the student will be able to:
1. Design and organize a survey, including estimation of probable errors.
2. Carry out reconnaissance of the area to establish best possible methods to be used.
3. Perform instruments checks to ensure they meet specifications.
4. Carry out basic surveying techniques.
5. Draw the survey using standard software.
6. Analyse, report and where appropriate distribute the survey errors.

Module Content
The Module covers the following topics
- linear measurement
- levelling
- angular measurement
• total Stations
• setting out
• horizontal & vertical curves
• GPS
• drafting, mapping and modelling

Recommended Text
*Uren & Price, Surveying for Engineers, Palgrave Publ.*

Other Relevant Texts
*W.Schofield, Engineering Surveying, 5th Ed., Elsevier Publs*
*Banister, Raymond & Baker Surveying, Longman Publ.*
*Wolf & Ghilani, Elementary Surveying, Prentice Hall Publ.*

Surveying Practicals
During the practical’s the students work in teams to carry out basic engineering tasks that would be encountered in a surveying team. These tasks are designed to enable hands-on work with the range of surveying equipment and accessories covered during the lectures:
• Levels : Level survey
• Levels : Two-peg Test
• Theodolites: Theodolite traverse
• Totals Stations: Total station traverse, detail survey
• Mapping Software: Adding features and contours to survey, creating sections.

Each practical requires submission of a report containing tabular result, sketch, error reporting, and commentary on the methods used.

Assessment Modes
The formal, written end-of-year examination comprises 75% of the year assessment.
Practical Reports: Reports from completion of each of the practical’s are assessed in terms of professional reporting:
   a) Scope and purpose of practical
   b) Results
   c) Analysis and conclusion

These reports comprise 15% of the year assessment

Practical Laboratory Exam: A practical laboratory exam is carried out at year end to assess individual familiarity with basic instruments, level, theodolite and total station. This comprises 10% of year assessment.

Further Information
http://www.tcd.ie/civileng/Staff/Aonghus.McNabola/