Surveying for Petroleum Engineers

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Surveying for Petroleum Engineers</th>
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<tbody>
<tr>
<td>Level</td>
<td>4</td>
</tr>
<tr>
<td>Reference No. (showing level)</td>
<td>EAX_4_271/PTRL05C03</td>
</tr>
<tr>
<td>Credit Value</td>
<td>10 credit points</td>
</tr>
<tr>
<td>Student Study Hours</td>
<td>Contact hours: 22 lectures + 11 Tutors</td>
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<td></td>
<td>Student managed learning hours: 100</td>
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<tr>
<td>Pre-requisite learning</td>
<td>-</td>
</tr>
<tr>
<td>Co-requisites</td>
<td>-</td>
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<tr>
<td>Excluded combinations</td>
<td>-</td>
</tr>
<tr>
<td>Module co-ordinator (Name + Email)</td>
<td>Prof. Mohamed Elwageeh</td>
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<td><a href="mailto:Mohamed.Elwageeh@bue.edu.eg">Mohamed.Elwageeh@bue.edu.eg</a></td>
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<tr>
<td>Faculty/Department</td>
<td>Engineering/PetroleumEngineering</td>
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<tr>
<td>Short Description</td>
<td>maps, GPS, total station, survey datums, projections.</td>
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Aims

The aim of this module is for the student to acquire the theoretical appreciation, practical skills and understanding of surveying necessary to work with geospatial data and operate in association with land surveyors within the Petroleum Engineering industry.

Learning Outcomes

**Knowledge and Understanding:**
On completion of this module students should be able to demonstrate knowledge and understanding of:

1. modern surveying instruments and field techniques (total stations and GPS);
2. reference frames used for horizontal and vertical control in the processing, presentation and management of geospatial data.

**Intellectual Skills:**
On completion of this module students should be able to/demonstrate ability in:

3. computational methods involving survey measurements, coordinates and reference frames;
4. assessing data and reports from land surveys in accordance with requirements, specifications and standards;

**Practical Skills:**
On completion of this module students should be able to/demonstrate ability in:

5. extracting information from maps, plans and charts with an understanding of the limitations;
6. utilise specialist software and components within geoscience applications generally that process and manage geospatial data;
7. use of spreadsheets for computational work;

**Transferable Skills:**
On completion of this module students should be able to/demonstrate ability in:

8. apply geometry in 2 and 3 dimensions;
9. calculating required pore and bulk volumes in oil;
To prepare student to get job and be professional graduate in future, the development of one or more of top engineering skills, namely problem solving, communication, management and environment and economics, is addressed in this module. Personal development planning is also one of our focuses in this module.

### Indicative content
- maps, charts and plans;
- length and distance measurements;
- levels and leveling;
- Theodolite and angular measurements;
- total stations;
- control surveys and reference frames;
- tacheometry and contouring
- area computation;
- volume computation;
- GPS techniques;
- hydrographic survey.

### Assessment Elements & weightings
- **Examination:** A 180 minutes unseen written examination assesses learning outcomes 1, 2, 3, 4, 8. 70%
- **Course Work:** 10% one accumulative practical group report assesses learning outcomes 1, 2, 3, 4, 5, 6, 7 and 20% three in-class assignments assesses learning outcomes 3, 7, 8. 30%
- Students must achieve (i) 40% for the total module mark and (ii) at least 30% in the unseen examination and the course work in order to achieve an overall passing mark for this module.

### Indicative Sources (Reading lists)