Description: Geodetic Surveying A

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<tr>
<td>SVY</td>
<td>2106</td>
<td>62687</td>
<td>1, 2007</td>
<td>ONC</td>
<td>1.00</td>
<td>Toowoomba</td>
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Academic group: FOENS
Academic org: FOES05
Student contribution band: 2
ASCED code: 031101

STAFFING
Examiner: Peter Gibbings

REQUISITES
Pre-requisite: SVY1110

RATIONALE
Surveyors require the knowledge and skills necessary to precisely locate features on the earth's surface. To do this, they require an understanding of the equipment and methods used to observe precise angles, and precise differences in level, as well as the determination of coordinates from GPS equipment.

SYNOPSIS
The purpose of this course is to provide the student with an understanding of the equipment and methods used to carry out precise surveys, including sources of error and the techniques used to minimise or eliminate them. In addition the students are expected to gain the necessary skills to complete these surveys at an appropriate standard.

OBJECTIVES
The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of this course, students should be able to:

1. describe the geodetic relationships of the size and shape of the earth (assignment 2 and exam);
2. use statistics to analyse geodetic observations, values and positional results (assignments 1, 2 and exam);
3. explain the construction properties and uses of the UTM map projection and identify its fundamental elements (exam);
4. demonstrate a knowledge of the sources of errors in precise angle observations and the techniques used to minimise their effects (assignments 1, 2 and exam);
5. demonstrate a knowledge of the effects of curvature and refraction on levelling and apply this knowledge to trigonometrical levelling (assignment 2 and exam);
6. demonstrate a knowledge of the equipment and methods used in precise levelling and of the sources of error and the techniques to minimise their effects (exam);
7. demonstrate an understanding of the fundamental principles of GPS carrier phase observations (exam);
8. describe the RTK and other GPS system components and explain their use and operation (exam);
9. describe the principles of data acquisition, data presentation and uses of the RTK GPS technique (exam)
10. demonstrate ability to enter data, without errors or omissions, into standardised systems for electronic processing (assignment 1 and exam).

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Introduction to Geodesy</td>
<td>10.00</td>
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<tr>
<td>2. Statistical Analysis in Surveying</td>
<td>10.00</td>
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<tr>
<td>3. Map Projections and the UTM</td>
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<td>4. Precise Angles Observations</td>
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<td>5. Trigonometrical Heighting</td>
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<tr>
<td>6. Precise Levelling and its Applications</td>
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<tr>
<td>7. The GPS phase Observable</td>
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<tr>
<td>8. The Real-Time Kinematic (RTK) system</td>
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<tr>
<td>9. Applications and data collection</td>
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</table>

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).


*SVY2106 Geodetic Surveying A External Study Package*, USQ Publication,

Microsoft Excel 97 or later (students purchasing this software will find it more economical to purchase the Microsoft Office package which includes Excel).

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Other references are provided at specific places in the USQ texts.
STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Examinations</td>
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</tr>
<tr>
<td>Laboratory or Practical Classes</td>
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<tr>
<td>Lectures</td>
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<tr>
<td>Private Study</td>
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ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
</tr>
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<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>150.00</td>
<td>15.00</td>
<td>16 Apr 2007</td>
</tr>
<tr>
<td>ASSIGNMENT 2</td>
<td>150.00</td>
<td>15.00</td>
<td>14 May 2007</td>
</tr>
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<td>3 HOUR CLOSED EXAMINATION</td>
<td>700.00</td>
<td>70.00</td>
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NOTES

1. Student Administration will advise students of the dates of their examinations during the semester.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:
   It is the students’ responsibility to attend and participate appropriately in all activities
   (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to
   study all material provided to them or required to be accessed by them to maximise their
   chance of meeting the objectives of the course and to be informed of course-related
   activities and administration.

2 Requirements for students to complete each assessment item satisfactorily:
   To satisfactorily complete an assessment item a student must achieve at least 50% of the
   marks or a grade of at least C-. Students do not have to satisfactorily complete each
   assessment item to be awarded a passing grade in this course. Refer to Statement 4 below
   for the requirements to receive a passing grade in this course.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of
   20% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade, a student must achieve at least 30% in each
   of the weighted assessment items, achieve at least 50% in the examination and at least
   50% of the total weighted marks available for the course.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
   In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/corporateservices/calendar/part5.htm or on the online Handbook.

ASSESSMENT NOTES

1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

2 Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.

3 In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.

4 In this course students may submit assignments electronically in the format specified in the assignment requirements.

5 The Faculty will NOT accept submission of assignments by facsimile.

6 Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.

7 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

8 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded one of the temporary grades: IM (Incomplete - Make up), IS (Incomplete - Supplementary Examination) or ISM (Incomplete - Supplementary Examination and Make up). A temporary grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non directed personal study.

9 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).
OTHER REQUIREMENTS

1. Students will require access to e-mail and internet access to USQConnect for this course.