



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at
<<http://www.usq.edu.au/coursespecification/current>>.
Please consult the web for updates that may occur during the year.

Description: Geodetic Surveying B

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
SVY	3107	90558	2, 2009	EXT	1.00	Toowoomba

Academic group:	FOENS
Academic org:	FOES05
Student contribution band:	2
ASCED code:	031101

STAFFING

Examiner: Peter Gibbings
Moderator: Xiaoye Liu

REQUISITES

Pre-requisite: SVY1110

OTHER REQUISITES

Recommended prior or concurrent study: SVY2105

RATIONALE

Geodesy is the science of measuring and representing the earth's surface, and the determination of a geometrical shape, size and mathematical model of the earth. Surveyors require a knowledge of the equipment and theoretical methods, used to determine geodetic coordinates using satellites and conventional methods.

SYNOPSIS

The purpose of this course is to provide the student with an understanding of the principles involved in determining the size and shape of the earth, and from these data how geodetic position on the earth's surface can be obtained. It also looks at the part satellites play in position fixation and how to relate all geodetic measurements to the ground. Map projections are examined to demonstrate the presentation of geodetic data in a useable format. The course provides the student with the necessary knowledge and skills to plan and undertake GPS surveys.

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. define the elements of geometry of the ellipsoid and the geoid that are relevant to geodetic surveying, and illustrate these with the aid of suitable diagrams (Exam);

2. identify the vertical datum most commonly used in Australia and explain how gravity measurements are used to help define this surface (Exam);
3. reduce measured angles and distances, manually and with appropriate software, to a form suitable for use in geodetic calculations (Assignment 1 and Exam);
4. explain the relationship between geographic coordinates of points, and the azimuth and spheroidal distance between these points (Assignment 1 and Exam);
5. apply this knowledge to calculations of geodetic traverses, intersections and resections, using geographic and UTM grid coordinates (Assignment 1, Assignment 2 and Exam);
6. explain the coordinate transformation process and transform three dimensional coordinates between systems and between datums, with the aid of suitable software, to the required level of accuracy (Assignment 2 and Exam);
7. explain the principles of post-processed GPS and its surveying applications, data acquisition methodologies and accuracies (Exam);
8. plan, observe, reduce and adjust a GPS survey network in accordance with appropriate standards (Exam); and
9. describe ground-based coordinate systems and the theory and use of site calibrations (Exam).

TOPICS

	Description	Weighting (%)
1.	Ellipsoids and datums	5.00
2.	Gravity and vertical datums	5.00
3.	Measuring on the Earth's surface	10.00
4.	Computations on the spheroid	10.00
5.	UTM grid coordinates	10.00
6.	Coordinate transformations	10.00
7.	GPS observation principles	10.00
8.	Post-processed GPS Surveying Systems	10.00
9.	Planning and design of GPS Surveys	10.00
10.	Field procedures	5.00
11.	Reduction and adjustment	10.00
12.	Ground-based coordinate systems	5.00

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).

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.

Access to MS Excel will greatly assist with completion of assessments 1 and 2.

Access to the Internet is require as several useful URL's are noted throughout the study materials.

Other references are provided in the SVY3107 Geodetic Surveying B, Study Book.

McElroy, S 1992, *Getting Started with GPS Surveying*, GPSCO, Bathurst.

((526.982 MACE))

Smith, JR 1988, *Basic Geodesy*, Landmark Enterprises, California.

(526.1 SMI)

Torge, W 1991, *Geodesy*, 2nd edn, DeGruter, Berlin.

(526.1 Tor)

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	50.00
Directed Study	48.00
Examinations	2.00
Private Study	55.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	200.00	20.00	31 Aug 2009
ASSIGNMENT 2	200.00	20.00	21 Sep 2009
2 HOUR CLOSED EXAMINATION	600.00	60.00	END S2 (see note 1)

NOTES

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

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
There are no attendance requirements for this course. However, it is the students' responsibility 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 individual assessment item a student must achieve at least 50% of the marks or a grade of at least C-. (Depending upon the requirements in Statement

- 4 below, students may not have to satisfactorily complete each assessment item 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 extenuating circumstances then a penalty of 5% of the assigned mark may apply for each working day late up to a maximum of ten working days at which time a mark of zero can be recorded for that assignment.
 - 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade in a course a student must obtain at least 50% of the total weighted marks 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 in the current USQ 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 despatched to USQ within 24 hours 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 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media.
- 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).