frames/datums, such as GDA/ITRF, and map projections,

(d) to provide

## EXPECTED LEARNING OUTCOMES

***This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.***

**By the end of this Semester you should be able to**

| Learning Outcomes (LO) | | EA Stage 1 Competencies |
|---|---|---|
| 1. | *Explain the definition of geodesy and its major tasks* | *PE1.1, PE1.2, PE1.6* |
| 2. | *Understand the basic concepts of geospatial reference systems and frames, gravity field and geoid* | *PE1.2, PE1.3, PE1.4* |
| 3. | *Implement the practical procedures of the transformation between the reference systems/frames and Sun tracking* | *PE1.5, PE2.1, PE2.3* |
| 4. | *Describe the purposes and methods of map projections* | *PE2.2, PE2.3, PE3.3* |
| 5. | *Understand the concept of satellite-based precise positioning technology* | *PE1.2, PE1.3, PE1.4* |
| 6. | *Use GPS/GNSS to define reference frames and determine the coordinates of points in a frame* | *PE2.4, PE3.3, PE3.4* |

*At UNSW, Normal workload expectations for each program are a minimum of 25 hours per semester per unit of credit, including class contact hours, preparation and time spent on all assessable work.*

**For each hour of contact it is expected that you will put in at least 1.5 hours of self-centred and self-directed study: for example, reading the course related materials provided through the course website and reflect on the conceptual framework discussed in the classes.**

**COURSE PROGRAM**

(The time slots for **visiting Sydney Observatory, Sun Tracking, GPS/GNSS Practical** as well as any other changes will be discussed/notified in the class and at the course website).

| Week start | Monday Lectures 4:00pm 6:00pm | Tuesday - Lectures 2:00pm 4:00pm | Tuesday Workshops 4:00pm 6:00pm |
|---|---|---|---|
| **1 17/2** | Course Outline. Fundamentals of Positioning; Introduction to Geodesy | Geodesy and Earth Motion | Introduction to Sun Tracking; |

## ASSESSMENT

**Assessment for this course includes:**

| Assessment Items | Length | Weight | Learning outcomes (LO) assessed | Due date* |
|---|---|---|---|---|

## RELEVANT RESOURCES

### Lecture Materials

**The course materials will be available _____: http://moodle.telt.unsw.edu.au/**
The Power Point lecture slides are available for download as PDF files at the course website.
*Electronic resources on the lecture topics are available at the course website.*

The class notes, latest journal articles and references related the course topics will be referred to and/or distributed during the lectures.

### Text and Reference Books

Rizos C. (1997) *Principles and Practice of GPS Surveying*, Monograph No. 17, School of Surveying and Spatial Information Systems, UNSW. Online at: http://www.sage.unsw.edu.au/about/school_pubs/pdfmono/mono17.pdf

Bossler, J., Jenson, J., Mcmaster, R., & Rizos, C. (eds.) (2002). *Manual of Geospatial Science and Technology*. Taylor & Francis Inc., ISBN 0-7484-0924-6, 623pp.

Mather, R.S. (1978) *The Theory and Geodetic Use of Some Common Projections*, Monograph 1, School of Surveying & Spatial Information Systems, UNSW.
Online at: **http://www.sage.unsw.edu.au/about/school_pubs/pdfmono/mono1.pdf**

Stolz, A. (2001) *An Introduction to Geodesy*, Monograph 16, School of Surveying & Spatial Information Systems, UNSW. Online at: **http://www.sage.unsw.edu.au/about/school_pubs/pdfmono/mono16.pdf**

### Computational Aids

Pocket calculators are required during lecturing hours, for

**All assignments and assessment items should be submitted with a signed Assessment Cover Sheet:**

I declare that this assessment item is my own work, except where acknowledged, and has not been submitted for academic credit elsewhere, and acknowledge that the assessor of this item may, for the purpose of assessing this item:

Reproduce this assessment item and provide a copy to another member of the University; and/or,

Communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the assessment item on its database for the purpose of future plagiarism checking).

I certify that I have read and understood the University Rules in respect of Student Academic Misconduct.

Signed: .....date: ☐☐ ☐☐ ☐☐

## ACADEMIC ADVICE

(Formerly known as Common School Information)

For information about:

- ¶ Notes on assessments and plagiarism,
- ¶ School policy on Supplementary exams,
- ¶ Special Considerations: student.unsw.edu.au/special-consideration
- ¶ Solutions to Problems,
- ¶ Year Managers and Grievance Officer of Teaching and Learning Committee, and
- ¶ CEVSOC.

Refer to Academic Advice on the School website available at:

https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/academic-advice

**Appendix A: Engineers Australia (EA) Competencies**

*Stage 1 Competencies for Professional Engineers*

| | **Program Intended Learning Outcomes** |
|---|---|
| **PE1: Knowledge and Skill Base** | |