

**Western University - Faculty of Engineering
Department of Civil and Environmental Engineering**

CEE 3324a – Surveying – Course Outline 2016

This course provides the student with an introduction to basic aspects of the theory and practice of plane surveying within the context of Civil Engineering. The use of AutoCAD to produce engineering drawings is also emphasized. The general objectives are for the student to become able to:

- Recognize the place and importance of surveying in an engineering context
- Use surveying equipment to perform basic measurements of elevations, distances and angles
- Identify sources of error in measurements, apply appropriate corrections and evaluate the influence of error on subsequent calculations
- Use measured data to calculate design parameters
- Use AutoCAD to produce effective engineering drawings

Calendar Copy:

The fundamental theory and procedures of plane surveying with application to engineering construction. This course runs in the summer for a period of 15 days (usually three weeks preceding the start of term). Limited enrollment. Preference will be given to students who have completed term 4 of the Civil Engineering program. (26 lecture hours, 52 field work/laboratory hours).

Prerequisites:

none

Corequisites:

none

Note: It is the **student's responsibility** to ensure that all Prerequisite and Corequisite conditions are met or that special permission to waive these requirements has been granted by the Faculty. It is also the **student's responsibility** to ensure that they have not taken a course listed as an Antirequisite. The student may be dropped from the course or not given credit for the course towards their degree if they violate the Prerequisite, Corequisite or Antirequisite conditions.

Extra Information:

2 lecture hours, 4 laboratory hours, 0.5 course.

Due to the concise nature of the course, students must attend the first class in order to be enrolled in the course. The last date for dropping the course is at the end of classes on the fourth day.

Contact Hours:

9:00am – 5:00pm for 10 days from August 22 – September 2. Consult the attached course schedule for further details.

Attendance at all lectures and fieldwork sessions is **mandatory**.

Instructor:

Dr. Jon Southen, SEB 3116, jsouthen@uwo.ca

Textbook:

Surveying, J.C. McCormac, Wiley, 2015, 6th Edition.
<https://www.vitalsource.com/referral?term=9781118324226>

AutoCAD 2016 and AutoCAD LT 2016 Essentials: Autodesk Official Press, S. Onstott, Sybex, 2015
<https://www.vitalsource.com/referral?term=9781119059202> (recommended)

Additional course notes will be made available through the course website (<http://owl.uwo.ca>).

Other References:

Elemental surveying: an introduction to geomatics, C.D. Ghilani and P.R. Wolf, Pearson, 14th Edition, 2015.

Laboratory:

This course comprises both surveying field work and AutoCAD assignments, which will be carried out as indicated on the attached (tentative) schedule. Dates and times are subject to change.

Computing:

Students will use AutoCAD to prepare drawings during tutorial sessions.

Units:

Both SI and US units will be used in lectures and examinations

Specific Learning Objectives:

Where applicable, students will learn to make field notes in a “standard format”.

The field work and laboratory assignments will prepare students to do the following:

1. Run a level loop to third order accuracy using an automatic level.
2. Chain the distances of a closed traverse to an accuracy of 1 in 3000.
3. Measure the internal angles of a closed traverse using a digital theodolite.
4. Use data from 2. and 3. above to perform a mathematical closure on the measured loop traverse.
5. Tie topographical details into the closed traverse.
6. Present the above information on a topographic plan.
7. From a given benchmark and base line determine the coordinates and elevation of a nearby point.
8. Calculate data for horizontal and vertical curves.
9. Given two (or three) control stations and their coordinates and appropriate design data for a section of highway, layout the curves and set grades based on the calculations done in 8.
10. From a specified base line, set out the location of a proposed building.
11. Produce topographic plans in AutoCAD.
12. Create plan, profile, and cross section drawings in AutoCAD.
13. Develop teamwork and group management skills.
14. Recognize the importance of surveying within the civil engineering context.

General Learning Objectives:

E=Evaluate, T=Teach, I=Introduce

Problem Analysis	I	Team Work	T	Ethics and Equity	
Investigation	E	Communication	E	Economics and Project Management	
Design		Professionalism	I	Life-Long Learning	I
Engineering Tools	E	Impact on Society			

Evaluation:

The final mark will be determined as follows:

Individual computation assignments	5%
AutoCAD assignments	20%
Field work and associated assignments	35%
Final Examination	<u>40%</u>
Total	100%

Note: (a) **Students must obtain an average of 50% on each of the above components to pass the course.** If a student fails any component, the student will be assigned the aggregate mark as determined above or 48%, whichever is less.

(b) **Students must turn in all laboratory reports, and achieve a passing grade in the laboratory component, to pass this course.** Students who do not satisfy this requirement will be assigned 48% or the aggregate mark, whichever is less.

(c) **Students who have failed this course previously must repeat all components of the course.** No special permissions will be granted enabling a student to retain laboratory, assignment or test marks from previous years. Previously completed assignments and laboratories cannot be resubmitted.

Examinations:

A three-hour FINAL EXAMINATION will be held during class hours, tentatively scheduled for **Friday, September 2 from 9:00 am to 12:00 pm.**

Assignments

Assignments will be due as indicated on the posted class schedule. Note that weather or field conditions may necessitate a change in due date, which will be communicated by the instructor during the lecture or tutorial sessions.

Use of English

In accordance with Senate and Faculty Policy, students may be penalised up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

Cheating:

University policy states that cheating is a scholastic offence. The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning.

For more information on scholastic offenses, please see:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Attendance:

Any student who, in the opinion of the instructor, is absent too frequently from class, laboratory, or tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final examination in the course.

Accessibility:

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct:

Students are expected to arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.uwo.ca/univsec/board/code.pdf>

Sickness and Other Problems:

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see attached). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

For more information concerning medical accommodations, please see:

http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf

Notice:

Students are responsible for regularly checking their email and notices posted outside the Civil and Environmental Engineering Department Office

Consultation:

Students are encouraged to discuss problems with their teaching assistant and/or instructor in tutorial sessions. Office hours will be arranged for the students to see the instructor and teaching assistants. Other individual consultation can be arranged by appointment with the appropriate instructor.

Course breakdown:

Engineering Science = 100%

The document "INSTRUCTIONS FOR STUDENTS UNABLE TO WRITE TESTS OR EXAMINATIONS OR SUBMIT ASSIGNMENTS AS SCHEDULED" is part of this course outline.