

4 Intended Learning Outcomes

The student will be able to use a total station to ...

1. Determine the elevation of an inaccessible point by 'trigonometric leveling' using a Total Station.
2. Determine the coordinates (N,E,Z) of an inaccessible point by 'triangulation' using a Total Station.
3. Perform a closed traverse using a Total Station with a Data Logger.
4. Survey a large rough land area: Retracement traverse and topographic data collection.
5. Upload and Download survey data to and from a data logger.
6. Manage and edit raw survey data logger files.
 - Convert raw data to a field book file; import files into a civil survey software (i.e. Civil 3D).
7. Use civil software to create a contour plan with annotated contours then plot a scale drawing.

The student will be able to participate in a group survey project that results in a large area being surveyed for later use with other courses.

1. The student will perform one of two closed control traverses that share a common leg. A minimum of one of the traverses will include two or more OIPs.
2. Precision for the traverse will be calculated and the traverse points adjusted using the compass method.
3. The student will perform closed bench mark circuits that will be used to carry over an NAD 83 referenced elevation from a nearby OCM.
4. The traverses will be adjusted for elevation and to use UTM coordinates using civil software to translate, rotate and change elevations of the points in each traverse as needed.
5. Student survey groups will use total stations to collect side shots
6. A contour map created and annotated.
7. Additional site information from local government will be x-referenced to the drawing.

5 Required Materials

Survey Supplies:

Field Book	'Rite-in-Rain' : stapled (#351 - preferred) or spiral bound (#353)	Required
2 mm Lead Holder	Staedtler 780C 2mm lead holder	Required
2mm 2H leads	Staedtler 2mm 2H leads (in tube)	Required
Short ruler	6 inch ruler with both metric and inch	Required
White eraser	Staedtler white vinyl eraser	Required
Lead sharpener	Staedtler 502 2mm lead sharpener (note the model with the chrome tip has a built-in lead sharpener)	Required if you have the black tipped lead holder

6 Reference Materials

Text: Kavanagh 2015, *Surveying with Construction Application*, 8th ed. [or 7th ed.]

7 Course Content and Schedule

Classes: 4 hours per week (videos outlining the lab will be posted prior to the lab)

8 Course Content and Schedule

Classes: 4 hours per week

Week	Date (Friday)	Lab #	Topic
1	07-May		Review
2	14-May	1	Lab: Introduction to Data Collectors
3	21-May	2	Lab: Introduction to Data Collectors continued
4	28-May	3	Lab: Control Traverse Survey Using Data Collectors
5	04-Jun	4	Lab: Station Descriptions
6	11-Jun	5	Lab: 'Big Field' Control Traverses
7	18-Jun	5	Lab: 'Big Field' Control Traverses
8	25-Jun	6	Lab: Topographic Survey Data Collection
9	02-Jul	6	Lab: Topographic Survey Data Collection continued
10	09-Jul	7	Lab: Curve Staking
11	16-Jul	8	Lab: Trigonometric Leveling
12	23-Jul	9	Lab: Surface Modelling
13	30-Jul		
14	06-Aug		No EXAM

This lab schedule may change during the semester depending how long it takes to perform each lab with consideration for covid-19 restrictions.

9 Student Assessment

COMPONENTS	WEIGHTING	COMMENTS
Field Book	25%	Formal booking for each lab
Labs	40%	Lab work
Final Project	25%	Topographic Map of Surveyed Site
Instructor Assessment	5%	Attendance, Punctuality
Participation	5%	Group Participation Assessment
Exams		No Exams
TOTAL	100%	

10 Grading System

Standard Grading System (GPA)

See [Camosun Grading Policy E-1.5](#)

- **Class Policies**

- All lab work & assignments must be completed and submitted.
 - Late assignments submitted before marked assignments have been returned to class will have 10% deducted.
 - Late assignments submitted after marked assignments have been returned to class will be checked and count as submitted but will receive no mark.
- Full attendance at the lab sessions is mandatory unless prior approval is granted by the instructor.
 - Students must speak directly to the instructor, and will be granted approval to miss a lab only under extreme circumstances.
 - In case of illness or other unscheduled cause for absence, the student must notify the instructor at least 30 minutes before class by email or by telephone.
- 2% will be deducted from the final grade for each absence from a lab without the instructor's prior permission or a doctor's certificate.
- Late arrivals greater than 20 minutes will be considered an absence.