



CAMOSUN COLLEGE
School of Trades and Technology
Department of Civil Engineering Technology

CIVE 142
Survey 2
Winter Semester 2020

COURSE OUTLINE

Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

1 Instructor Information

Instructor:	Stephen Cowden
Office hours:	Mondays 1:30pm to 2:30pm
Office:	TEC 105
Phone:	250-370-4504 Alternative: _____
E-mail:	cowdens@camosun.ca
Website:	civil.camosun.bc.ca/student (click on CIVE 142)

2 Prerequisites and Co-requisites

Prerequisite: CIVE 141

3 Short Description

Students traverse and survey a two to three hectare area of land using a total station with a data collector. Data is then uploaded to specialized software in order to create a digital surface and final topographic map. A survey layout is also conducted using a total station and data collector to enable construction of an engineering design.

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 pointer	Staedtler 502 2mm lead pointer (note the model with the chrome top has a built in pencil sharpener)	Optional
Metal Erasing Shield	Staedtler 529-50 erasing shield	Optional
Triangular Set-squares	Small 30-60° and 45° set squares	Optional
Protractor	4-inch minimum size - either a 180° or 360° (preferred)	Optional
Squared paper	5 squares / inch (1 square ≈ 5 mm)	Optional

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 (a ½ to 1 hour pre-lab lecture and one 3 ½ to 3 hour lab period)

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Week	Week of Monday	Topic
1	Jan. 6	Lab 01: Trigonometric Leveling
2	Jan. 13	Lab 02: Triangulation
3	Jan. 20	Lab 03: Introduction to Data Collectors
4	Jan. 27	QUIZ: QUESTIONS FROM LAB 01 AND LAB 02 Lab 04: Multi-Set Angles Using Data Collectors
5	Feb. 3	Lab 05: Control Traverse Survey Using Data Collectors
6	Feb. 10	Lab 06: Layout of Road Curve
7	Feb. 17	Reading Break: No Lab
8	Feb. 24	Lab 07: Organization for Final Project
9	Mar. 2	Lab 08: 'Big Field' Control Traverses
10	Mar. 9	Lab 08: 'Big Field' Control Traverses continued
11	Mar. 16	Lab 09: Topographic Survey Data Collection
12	Mar. 23	Lab 09: Topographic Survey Data Collection continued
13	Mar. 30	Lab 09: Topographic Map Creation
14	Apr. 6	Lab 09: Topographic Map Creation continued
15/16	Exam Week – NO EXAM	

9 Student Assessment

COMPONENTS	WEIGHTING	COMMENTS
Field Book	25%	Formal booking for each lab
Labs	35%	Lab work
Quiz	5%	One quiz
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.