GEOINFORMATICS LABORATORY
EXERCISE 5: Traverse by Digital Theodolite

Objective: To establish a close traverse using digital theodolite and adjust the closing error using Bowditch's rule.

Equipments: Nikon Electronic Digital theodolite NE-203, Leveling staff, Pegs, Tape and Compass

Procedure:

1. Perform "Initial Settings" for digital theodolite as given in the Instrument Manual.
2. Choose 6 stations forming a hexagonal closed figure of side 40-50m long. Each group will be setting up the instrument at only one station.
3. Before setting up the instruments, find out the length of each side by tape and tacheometry.
4. Carry out temporary adjustments for the equipment (i.e. centering and leveling, etc.).
5. After setting the instrument at each station, record all angles (horizontal and vertical). Each individual from every group has to record both ***face right*** and ***face left*** observations. While recording the angles, please close the horizon and apply station adjustment. Each student should observe the horizontal angle with different "ZERO" or initial reading. You may use sample Table.
6. After taking readings at a station, move to the next station. **DO NOT MOVE THE INSTRUMENT.** Use the same instrument set up by the previous group. Repeat horizontal and vertical angle measurements.
7. Adjust closing error using Bowditch's rule. You may use sample Table 2.
8. Keep these observations (angular) with you in an Excel file. In future, you will be required to **adjust** these readings using the *least squares adjustment* methods.

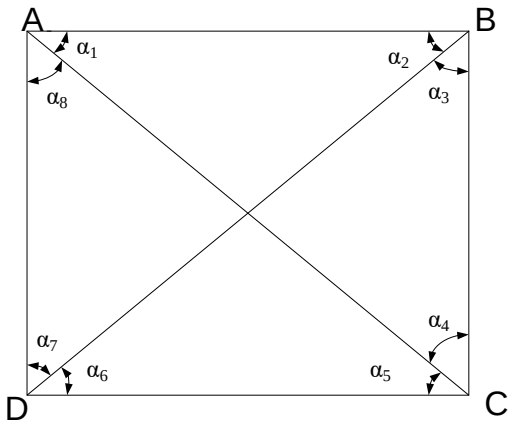

Table 2: Gales Table for Correction and Computations

Line	WCB	Length (m)	Latitude			Departure		
			Calculated	Correction	Corrected	Calculated	Correction	Corrected
1-2								
2-3								
3-4								
4-5								
5-6								
6-1								
	Σ							

Closing Error :
tan θ :
Relative Precision :

Table 1: Observation Table for recording angles

Group No.: Equipment detail: Height of the instrument:

Recorded by: Observed by: Date:

I.S.	Station observed	Face (L/R)	Horizontal Angle			Vertical Angle		
			Reading	Corrected Angle	Mean	Reading	Corrected Angle	Mean
		L						
	Error							
		R						
	Error							
		L						
	Error							
		R						
	Error							
		L						
	Error							
		R						
	Error							