

# A Training on Total Station Operations



**CENTURION  
UNIVERSITY**  
*Shaping Lives...  
Empowering Communities!*

Conducted by  
**Department of Civil Engineering**

*Resource Persons*

**Dr. Prafulla Kumar Panda  
Mr. Prabhakar Sabar  
Mr. Sai**



# Preface

A Five Days Training on "Total Stations Operations" was organized by the Civil Engineering Department, Centurion University of Technology & Management, Paralakhemundi Campus, Odisha from 7th to 11th March, 2022 for the Civil Engineering Students. This Training session was organized by Dr. Prafulla Kumar Panda, HOD, Civil Engineering Department. Mr. Prabhakar and Mr. Sai disseminated the Training Sessions and Tutorials.

# Training Objectives



- To learn the basic concept of surveying and understand how total station works.
- To learn different parts of the total station as well as how to operate it.
- To learn surveying using total station, techniques and the real-world applications.
- To learn how to use related surveying software (Auto CAD, GIS) for data download and processing.
- To generate outputs and present the results in form of contours, surfaces etc.
- To have a clear understanding of the principles of surveying with a total station.
- To have theoretical and practical skills in working with different total station modes.
- To have an opportunity for trainers to share experiences of their specific work and roles

# Draft Agenda - Day 1

<b>Training Day-1</b>	<b>Topics Covered on 07/03/2022</b>
<b>08:30 AM - 11:00 AM</b>	<b>Introduction: In the first day, the students will be introduced to basic principles of Total Stations, Level Machines and GPS; On field demonstration</b>
<b>11:30 AM- 01:00 PM</b>	<b>Parts of a Total Station - This section will cover introduction to Topcon GTS 1002 total station; powering on the total station; Getting started with the names and functions of a total station parts; Powering off the total station; the accessories of the total station. On field demonstration</b>
<b>03:00 PM- 05:00 PM</b>	<b>Introduction to theoretical background to the basic distance, angle and coordinate measurements. On field demonstration</b>

# Draft Agenda - Day 2

**Training  
Day-2**

**Topics Covered on 08/03/2022**

**08:30 AM -  
11:00 AM**

**Setting-up and Operating a Total Station: The initial total station setup; Total station modes (i) Angle mode (ii) Distance mode; Review of Assignments**

**11:30 AM-  
01:00 PM**

**iii) Coordinate mode (iv) Offset mode; (v) Carrying out measurements... On field demonstration**

**03:00 PM-  
05:00 PM**

**Surveying (Field Data Collection): Field data collection; surveying; staking out; resection method; file management; importing and exporting data**

# Draft Agenda - Day 3

**Training  
Day-3**

**Topics Covered on 09/03/2022**

**08:30 AM -  
11:00 AM**

**Area (projection and roadway); downloading data and processing it in AutoCAD Civil 3D and GIS (Data processing in lab)**

**11:30 AM-  
01:00 PM**

**Plotting and Leveling the contours; map layout; (Lab work)  
Review of Assignments**

**03:00 PM-  
05:00 PM**

**Map production; working with surfaces, applications of topo data in drainage systems (Data processing in lab)**

# Draft Agenda - Day 4

<b>Training Day-4</b>	<b>Topics Covered on 10/03/2022</b>
<b>08:30 AM - 11:00 AM</b>	<b>Total Station Errors (Types of Errors &amp; Adjustment): Types of survey/total station errors - angular errors, distance errors; coordinate errors; adjusting index error; adjustment and corrections; total station config; COGO; on field</b>
<b>11:30 AM- 01:00 PM</b>	<b>Group division and activities</b>
<b>03:00 PM- 05:00 PM</b>	<b>Group wise activity (1 to 6)</b>

# Draft Agenda - Day 5

**Training  
Day-5**

**Topics Covered on 11/03/2022**

**08:30 AM -  
11:00 AM**

**Review**

**11:30 AM-  
01:00 PM**

**Data post-processing (Lab work)**

**03:00 PM-  
05:00 PM**

**Review of Assignments**











