TOPOGRAPHICAL SURVEY

UNIT CODE: LSM/CU/LM/CR/01/6/A

Relationship to Occupational Standards

This unit addresses the unit of competency: Conduct topographical survey

Duration of Unit: 120 hours

Unit Description

This unit describes the competencies required by a surveyor to conduct a reconnaissance, monument control points, determine position of control points, determine position of detail points and prepare topographical map

Summary of Learning Outcomes

1. Conduct a reconnaissance
2. Monument control points
3. Determine position of control points
4. Determine position of detail points
5. Prepare topographical map

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Conduct a reconnaissance	❑ Meaning of reconnaissance ❑ Objectives of reconnaissance ❑ Importance of a reconnaissance ❑ Identification of existing control points ❑ Establishment of new control points ❑ Safety precautions	❑ Observation ❑ Oral questioning ❑ Written tests
2. Monument control points	❑ Meaning of control points ❑ Types of monuments o Wooden pegs o Iron pins (IP)	❑ Observation ❑ Oral questioning ❑ Written tests

	○ Iron pin in concrete (IPC) ○ Iron pin in concrete underground (IPCU) ○ Pillars. ○ Angle iron in Concrete (AIC) ○ Angle iron in concrete underground	❑ Practical assessments
3. Determine position of control points	❑ Types of control points ❑ Importance of control points. ❑ Distance measurements ○ Tapes ○ Distance Measurement (EDM) ○ Optical Distance Measurement (ODM) ○ Distance adjustments ○ Errors ❑ Angle and direction measurements ❑ Establishment of horizontal controls ○ Traversing ○ Triangulateration ○ Global Navigation Satellite System (GNSS) ❑ Establishment of vertical controls; ○ Leveling ○ Trigonometric heighting ○ Global Navigation Satellite System (GNSS)	❑ Observation ❑ Oral questioning ❑ Written tests ❑ Practicals

	❑ Application of control points	
4. Determine position of detail points	❑ Meaning of detail points ❑ Importance of detail points ❑ Picking of detail points and spots heights. ❑ Application of detail points	❑ Observation ❑ Oral questioning ❑ Written tests ❑ Practicals
5. Prepare topographical map	❑ Cartographic map elements ❑ Map scales and precision ❑ Map projections ❑ Coordinate transformations ❑ Plotting of detail points ❑ Plotting of spot height coordinates ❑ Generation of contours ❑ Map designs and layout	❑ Observation ❑ Oral questioning ❑ Practicals

Suggested Delivery Methods

- Teaching
- Demonstration by trainer
- Practical work by trainee
- Demonstration videos
- Projects
- Group projects
- Industrial attachment
- Internship

Recommended Resources

- Survey equipments and tools
- Survey data plans
- CAD software
- Computers
- Stationery
- Online resources
- Storage media
- Transportation
- Store
- Reference Text Books