

SURVEY INSTRUMENTS

UNIT CODE: LSM/CU/LM/CC/02/6/A

Relationship to Occupational Standards

This unit addresses the unit of competency: Operate survey instruments

Duration of Unit: 96 hours

Unit Description

This unit describes competencies required by a surveyor to operate linear, angle and linear-angle measuring survey instruments

Summary of Learning Outcomes

1. Operate linear measuring instruments
2. Operate angle measuring instruments
3. Operate height measuring instruments
4. Operate linear-angle measuring instruments

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Operate linear measuring instruments	<ul style="list-style-type: none"><input type="checkbox"/> Units of linear measurements and their conversions<input type="checkbox"/> Types of linear measuring instruments and their operations<ul style="list-style-type: none">○ Tape/ Chains○ Electromagnetic Distance Measurement (EDM)○ Optical Distance Measurement (ODM)○ Sonic Distance Measurement (SDM)○ Tachometry○ Laser distant meters	<ul style="list-style-type: none"><input type="checkbox"/> Written tests<input type="checkbox"/> Oral questioning<input type="checkbox"/> Assignments<input type="checkbox"/> Supervised exercises

	<ul style="list-style-type: none"> ❑ Accuracy and precision in linear measurements ❑ Error analysis and adjustment <ul style="list-style-type: none"> ○ Types of errors ○ Sources of errors ○ Adjustment of errors ❑ Care and maintenance of linear measuring equipment 	
2. Operate angle measuring instruments	<ul style="list-style-type: none"> ❑ Units of angular measurements and their conversions ❑ Types of angular measuring instruments and their operations <ul style="list-style-type: none"> ○ Theodolite ○ Compass ○ Sextant ❑ Accuracy and precision in angular measurements ❑ Error analysis and adjustment <ul style="list-style-type: none"> ○ Types of errors ○ Sources of errors ○ Adjustment of errors ❑ Care and maintenance of angular measuring equipment 	<ul style="list-style-type: none"> ❑ Assignments ❑ Supervised exercises ❑ Written tests
3. Operate height measuring instruments	<ul style="list-style-type: none"> ❑ Techniques of height measurements <ul style="list-style-type: none"> ○ Direct (Levelling) ○ Indirect(Trigonometry) ❑ Types of levelling instruments and their operations <ul style="list-style-type: none"> ○ Digital levels ○ Ordinary levels ○ Precise levels 	<ul style="list-style-type: none"> ❑

	<ul style="list-style-type: none"> ○ Automatic levels ○ Laser levels ☐ Accuracy and precision in height measurements ☐ Error analysis and adjustment <ul style="list-style-type: none"> ○ Types of errors ○ Sources of errors ○ Adjustment of errors ☐ Care and maintenance of height measuring equipment 	
4. Operate linear-angle measuring instruments	<ul style="list-style-type: none"> ☐ Types of linear-angular measuring instruments and their operations <ul style="list-style-type: none"> ○ Total station ○ GNSS equipment ☐ Accuracy and precision in linear-angular instruments ☐ Error analysis and adjustment <ul style="list-style-type: none"> ○ Types of errors ○ Sources of errors ○ Adjustment of errors ☐ Care and maintenance of angular measuring equipment 	

Suggested Delivery Methods

- Lecturing
- Group discussions
- Demonstration by trainer
- Exercises by trainee

Recommended Resources

- Survey instruments
- Computing instruments
- Booking sheet

- Stationery
- Computers with internet connection

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