

-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

**Hanover House
24 Douglas Street
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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	0094375	-Session-1989-90
-Superclass-	XS	

-Title-	MEASUREMENT TECHNIQUES FOR VEHICLE CRAFT SKILLS (x 1/2)
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-DESCRIPTION-

Purpose	This module introduces the student to a variety of measuring techniques and instruments used in motor vehicle engineering. It is suitable for all vehicle trade operations.
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It is aimed at those intending to pursue a career in the motor vehicle repair industry. The module is also designed to complement RTITB module MVO14F Light and Heavy Vehicles: Repair and Maintenance Skills and will provide the student with the necessary knowledge and skills to prepare for the RTITB Skills Test. It should be noted however that adequate supporting industrial experience will also be necessary.

Preferred Entry Level	No formal entry requirements
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Learning Outcomes	The student should: <ol style="list-style-type: none">1. identify instruments used to measure linear, angular, volumetric and electrical quantities;2. prepare and use measuring instruments to produce accurate results;3. maintain measuring instruments in a serviceable condition.
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Content/ Context	<p>Safety regulations, safe working practices and procedures should be observed at all times.</p> <p><u>Corresponding to Learning Outcomes 1-3:</u></p> <p>This module should be taught in the context most suited to the student's particular needs.</p> <p>The students should be made aware of the following:</p> <ul style="list-style-type: none"> (i) the limitations of each instrument with respect to accuracy; (ii) most suitable instrument for the degree of accuracy required; (iii) importance of checking and setting instruments before use; (iv) care in the operation, cleaning and storage of instruments; (v) effect of changing temperatures on instruments; (vi) different types in use i.e. Analogue, Digital; (vii) areas of the motor vehicle where each instrument could apply.
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Suggested Learning and Teaching Approaches	<p>This module should be taught in a workshop where the student is given adequate opportunity to use measuring instruments.</p> <p>Measurements should relate to the motor vehicle and should include vehicle components, working clearances, electrical quantities, volumes and angles.</p>
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Assessment Procedures	<p>Acceptable performance in the module will be satisfactory achievement of all the performance criteria specified for each Learning Outcome.</p> <p>The following abbreviations are used below:</p> <ul style="list-style-type: none"> LO Learning Outcome IA Instrument of Assessment PC Performance Criteria
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LO1

IDENTIFY INSTRUMENTS USED TO MEASURE LINEAR, ANGULAR, VOLUMETRIC AND ELECTRICAL QUANTITIES

PC The student:

- (a) identifies linear and angular measuring instruments by name and type;
- (b) states degree of accuracy normally associated with each instrument;
- (c) identifies volumetric measuring devices by capacity;
- (d) identifies electrical measuring instruments by name;
- (e) distinguishes between System International (SI) metric and imperial instruments by reference to the scale used.

IA Short answer questions

The student will be presented with short answer questions to test the recall of knowledge related to instruments used to measure linear, angular volumetric and electrical quantities.

The test will consist of 12 questions allocated as follows:

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| (a) linear and angular measuring instruments | 4 |
| (b) degree of accuracy | 2 |
| (c) volumetric measuring devices | 2 |
| (d) electrical measuring instruments | 2 |
| (e) SI metric and imperial | 2 |

Satisfactory achievement of the Learning Outcome will be demonstrated by the student producing 9 correct responses overall, with at least 2 from (a) and 1 correct response for each of (b) to (e) above.

LO2

PREPARE AND USE MEASURING INSTRUMENTS TO PRODUCE ACCURATE RESULTS

PC The student:

- (a) sets and checks instruments for zero;
- (b) follows operating procedures which ensure accurate readings;
- (c) reads instruments accurately;
- (d) accurately reports readings obtained.

IA Practical Exercise.

The student will be presented with a practical exercise to test the application of knowledge and skills involved in the preparation and use of measuring instruments to produce accurate results.

The exercise should involve the use of the following instruments:

1. micrometers;
2. vernier gauge;
3. dial test indicator (dti);
4. voltmeter;
5. tyre depth gauge;
6. steel rule;
7. ohmmeter;
8. ammeter;
9. measuring glass;
10. simple camber gauge and/or steering turntables;
11. feeler gauges.

Satisfactory achievement of the Learning Outcome will be based on all performance criteria being met.

LO3

MAINTAIN MEASURING INSTRUMENTS IN A SERVICEABLE CONDITION

PC The student:

- (a) outlines corrosion proofing procedures;
- (b) packages and stores instruments and associated components to prevent damage.

IA Practical Exercise.

The student will be presented with a practical exercise to test the application of knowledge and skills involved in maintaining measuring instruments in a serviceable condition.

The assessment of this Learning Outcome may be completed at the point of use for the following:

1. micrometers;
2. vernier gauge;
3. dial test indicator (dti);
4. voltmeter;
5. tyre depth gauge;
6. steel rule;
7. ohmmeter;
8. ammeter;
9. measuring glass;
10. simple camber gauge and/or steering turntables;
11. feeler gauges.

Satisfactory achievement of the Learning Outcome will be based on all performance criteria being met.