

**-SQA-SCOTTISH QUALIFICATIONS AUTHORITY**

**Hanover House  
24 Douglas Street  
GLASGOW G2 7NQ**

**NATIONAL CERTIFICATE MODULE DESCRIPTOR**

**-Module Number- 0064420 -Session-1986-87**  
**-Superclass- VG**  
**-Title- PLANT INSTRUMENTATION AND TESTING**

**-DESCRIPTION-**

Type  
and  
Purpose

A specialist module which develops the student's ability to apply the principles, procedures and practices used in testing industrial plant.

Preferred  
Entry Level

04414 Plant Services: Steam and Compressed Air.

Learning  
Outcomes

The student should:

1. know the function of instrumentation;
2. be able to apply the principle of systematic fault diagnosis;
3. be able to test alarm systems and protection devices used in industrial applications;
4. comply with regulations and procedures and use safe working practices specified for equipment and work areas.

Content/  
Context

Principles of operation of common measuring instruments/systems, method of adjustment, amplifying mechanism, etc, relating to speed, temperature, flow and pressure, etc.

Elements of a measurement system: sensing; signal conditioning and output.

Instrument characteristics such as accuracy, repeatability, sensitivity, range and response time, which influence instrument selection for a particular purpose.

Calibration of instruments.

Application of indicating and recording devices. Principles and operation of alarm systems and protection devices used in industrial applications.

Fault diagnosis; systematic procedure for locating faults in a system.

Safety precautions applicable to tools, equipment and work areas.

#### Suggested Learning and Teaching Approaches

Measurement and instrumentation systems should initially be represented by block diagrams. Each element should be identified and its function described and discussed until the complete system is understood.

Groups of 2 or 3 students should examine the instrument systems stated in the content/context to determine principles of operation, function of each element, method of adjustment, amplifying mechanism, etc.

Each student should produce a short report on each of the instrument systems examined. The report should include a systems diagram, description of operation and function of each element.

At least one of the reports should include a detailed comparison of a conventional instrumentation system and a microprocessor based system performing a similar function.

Students working in groups of 2 or 3 should complete a project which involves either selection of instruments for testing a working system or measuring and recording plant process variables.

Safety, safe practices, care and use of equipment should be an integral part of each module activity.

#### Assessment Procedures

All learning outcomes must be validly assessed.

The student must be informed of the tasks which contribute to summative assessment. Any unsatisfactory aspects of performance should, if possible, be discussed with the student as and when they arise.

Acceptable performance in the module will be satisfactory achievement of the performance criteria specified for each learning outcome.

The following abbreviations are used below:

LO Learning Outcome  
IA Instrument of Assessment  
PC Performance Criteria

LO1, 2 & 3

IA Assignment report

PC The student writes a report on specified plant which includes:

LO1

(a) a reasonable description of the plant instrumentation and its function;

LO2

(b) a logical fault diagnostic procedure;

LO3

(c) a reasonable procedure for testing alarms and safety devices.

LO4

IA Observation checklist.

PC The student consistently:

(a) wears all necessary safety clothing and equipment;

(b) behaves in a manner appropriate to the working environment;

(c) uses tools and equipment safely.