-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

HIGHER NATIONAL UNIT SPECIFICATION

GENERAL INFORMATION

Unit Number	**D3PH 04**
Unit Title	ANALYSIS INSTRUMENTATION
Superclass Category	WD
Date of Publication (month and year)	
Originating Centre for Unit	Cleveland Open Learning Unit

DESCRIPTION

GENERAL COMPETENCE FOR UNIT:

Designing sampling systems and analysing the operation of analytical instruments.

OUTCOMES:

1. design a sampling system;
2. describe and choose process plant analytical instrumentation.

CREDIT VALUE: 1 HN Credit

ACCESS STATEMENT:

Access to this unit is at the discretion of the centre. It would, however, be beneficial if the student had competence in basic instrumentation systems.

Additional copies of this unit can be obtained from: The Administrative Services Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ (Tel: 0141-242 2166).

At the time of publication, the cost is £2.50 (minimum order £5.00)

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STATEMENT OF STANDARDS

Unit Number

Unit Title ANALYSIS INSTRUMENTATION

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the specification. All sections of the statement of the standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. DESIGN A SAMPLING SYSTEM

PERFORMANCE CRITERIA

(a) Design of the installation patterns for a sampling system is accurate in relationship to given parameters.
(b) Identified properties of the sample comply with the standards set by the instrument manufacturer for satisfactory performance of the instrument.

RANGE STATEMENT

The range is fully expressed within the performance criteria.

EVIDENCE REQUIREMENTS

Written, diagrammatic and graphical evidence of the candidate's ability to design a sampling system suitable for obtaining a suitably conditioned, representative sample as per an instrument manufacturer's specification.

OUTCOME

2. DESCRIBE AND CHOOSE PROCESS PLANT ANALYTICAL INSTRUMENTATION

PERFORMANCE CRITERIA

(a) Descriptions of the construction and principles of operation of common analytical instruments are correct.
(b) Selection of an instrument is appropriate for a given application.

RANGE STATEMENT

Analytical instruments: density; viscosity; humidity; gas composition; pH; water purity; gas and safety system; turbidity.

EVIDENCE REQUIREMENTS

Continuation

Written evidence of the candidate's ability to describe the construction and operation of common analytical instruments. Written evidence verifying that the selection of each appropriate analytical instrument in the range is correct for given processes.

MERIT

To gain a pass in this unit, a candidate must meet the standards set out in the outcomes, performance criteria, range statements and evidence requirements.

To achieve a merit in this unit, a candidate must demonstrate a superior or more sophisticated level of performance. In this unit this might be shown by demonstrating the ability to use different performance criteria in an integrative way.

ASSESSMENT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes.)

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records of candidates' achievements should be kept. These records will be available for external verification.

SPECIAL NEEDS

Proposals to modify outcomes, range statements or agreed assessment arrangements should be discussed in the first place with the external verifier.

Continuation

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SUPPORT NOTES

Unit Number

Unit Title ANALYSIS INSTRUMENTATION

SUPPORT NOTES:

This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

NOTIONAL DESIGN LENGTH:

SQA allocates a notional design length to a unit on the basis of time estimated for achievement of the stated standards by a candidate whose starting point is as described in the access statement. The notional design length for this unit is 40 hours. The use of notional design length for programme design and timetabling is advisory only.

CONTENT/CONTEXT

The following information gives further clarification regarding the context in which the outcomes and performance criteria are to be achieved.

Corresponding to the Outcome:

1. (a) & (b) Location of sampling, concept of a representative sample, let down equipment, filter, driers, extraction from vacuum systems, sampling system materials, sample conditioning and lags, sample disposal.

2. (a) & (b) Typical applications and the principles of operation of instruments involved in:

    - Density measurement
    - Gas chromatography
    - Electrochemical analysis
    - pH and redox measurements
    - Infrared systems
    - Ultra-violet and visible light systems, turbidy, smoke density
    - Oxygen measuring meters
    - Moisture measurement
    - Viscosity of liquids
    - Gas detection and toxic gases and measurement for protection of personnel
    - Water purity.

REFERENCES

1. Guide to unit writing.
2. For a fuller discussion on assessment issues, please refer to SQA's Guide to Assessment.
3. Information for centres on SQA's operating procedures is contained in SQA's Guide to Procedures.
4. For details of other SQA publications, please consult SQA's publications list.