-SQA- SCOTTISH QUALIFICATIONS AUTHORITY

Hanover House
24 Douglas Street
GLASGOW G2 7NQ

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	**3161101**	**-Session- 1991-92**
-Superclass-	**RA**	

-Title- **SCIENCE IN CONTEXT 1**

-DESCRIPTION-

Purpose

This module is designed to develop the student's handling information and problem solving skills in a scientific context.

This module assumes limited scientific background. It could be used as part of a programme where the student requires knowledge and ability in science in one or more specific context(s) or it could be done as a general interest module.

The module could be done in conjunction with 3161131 Science Practical Skills (x 1/2) and 3161121 Introducing Science Investigation Skills (x 1/2).

Preferred Entry Level

3161001 Introducing Science or
3161011 Measuring and Recording in Science (x 1/2) or Standard Grade in Science at Grade 5.

Outcomes

The student should:

1. collate information from provided resources;
2. present information in accordance with specified formats;
3. handle numerical data using a two-stage arithmetical operation;
4. draw valid conclusions which take account of factors affecting validity.

Assessment Procedures

Acceptable performance in the module will be satisfactory achievement of all the Performance Criteria specified for each Outcome.

The following abbreviations are used below:

PC Performance Criteria
IA Instrument of Assessment

Note: The Outcomes and PCs are mandatory and cannot be altered. The IA may be altered by arrangement with SQA. (Where a range of performance is indicated, this should be regarded as an extension of the PCs and is therefore mandatory.)

OUTCOME 1 COLLATE INFORMATION FROM PROVIDED RESOURCES

PCs

(a) Information collated from resources is relevant to the given task.
(b) The specification of references is complete.

IA Assignment(s)

An assignment(s) to assess the student's ability to collate information from provided resources.

The assignment(s) should be structured around specific tasks in which the student is provided with easily identifed sources of information. The student will be required to complete the following tasks on two occasions:

(a) combining information from at least two different sources;
(b) specifying the references for these sources to enable location by another user.

Satisfactory achievement of the Outcome will be demonstrated by the student achieving both Performance Criteria on both occasions.

OUTCOME 2 PRESENT INFORMATION IN ACCORDANCE WITH SPECIFIED FORMATS

PCs

(a) A written or oral presentation of information is appropriate to the given task.
(b) A tabular presentation of the information is accurate.
(c) A diagrammatic presentation of information is recognisable, clearly labelled and approximately to scale.
(d) A graphical presentation of given tabulated information is accurate with respect to axes and appropriate scales.

IA Assignment(s)

An assignment(s) to assess the student's ability to present information in a specified format.

The assignment should be structured around specific tasks in which the student is provided with appropriate data. The student will be required to complete the following tasks on two occasions:

(a) presentation of information in oral or written form - at least 200 words;
(b) presentation of information in tabular form;
(c) presentation of information as a labelled diagram - rulers to be used where appropriate (diagrams to have a minimum of four labels);
(d) presentation of information in graphical form - line graph, bar graph, histogram or pie chart (using a minimum of 3 divisions using simple divisions eg. 1/4, 1/2, 3/4, 1/8, 3/8, 5/8, 7/8).

Satisfactory achievement of the Outcome will be demonstrated by the student achieving the Performance Criteria for each task on both occasions.

OUTCOME 3 **HANDLE NUMERICAL DATA USING A TWO-STAGE ARITHMETICAL OPERATION**

PCs

(a) The calculation of an arithmetic mean from given values is correct to an appropriate number of significant figures.
(b) The calculation of a percentage from given values is correct to an appropriate number of significant figures.
(c) The conversion of a metric quantity to a multiple or sub-multiple form is correct.

IA Assignment(s)

An assignment(s) to assess the student's ability to handle numerical data using a two stage arithmetical operation.

The assignment(s) should be structured around specific tasks in which the student is provided with data as appropriate. The student will be required to complete the following tasks on two occasions:

(a) calculation of an arithmetic mean from a minimum of 5 values each having at least 2 significant figures;
(b) calculation of a percentage;
(c) conversion of metric quantities.

Satisfactory achievement of the Outcome will be demonstrated by the student achieving the Performance Criteria for each task on both occasions.

OUTCOME 4 **DRAW VALID CONCLUSIONS WHICH TAKE ACCOUNT OF FACTORS AFFECTING VALIDITY**

PCs

(a) The identification of factors which affect the quantities given in the data is correct.
(b) The conclusion drawn is valid.

IA Structured Questions

2 structured questions to assess the student's ability to draw valid conclusions which take account of factors affecting validity.

In the questions the student should be given information on the method of collecting data, the data and any other relevant factors. The student will be required to identify at least two factors which will affect the results and take account of them when stating the conclusions.

Satisfactory achievement of the Outcome will be demonstrated by the student achieving both Performance Criteria for both structured questions.

The following sections of the descriptor are offered as guidance. They are not mandatory.

CONTENT/CONTEXT

The module can be taught in one or more specific context(s). Knowledge and understanding of scientific ideas and applications should be assessed as the student demonstrates ability in handling information and problem solving.

Resources could include indexes, passages of text, pictures, tables, diagrams, graphs and charts, films, videos and computer software and any other appropriate resource materials.

Suitable topics for the module can be developed within areas of study relevant to the needs and interests of the students involved.

SUGGESTED LEARNING AND TEACHING APPROACHES

A range of learning and teaching approaches within the student-centred philosophy may be appropriate.

A resource-based approach is likely to be the most flexible for this module. Opportunities to use new technology should be considered. Resource material, in the form of publications, audio-visual materials etc. should be made available.

During the work of the module students should have several opportunities to practise their skills. It is recommended that the tutor assesses each student at the stage where he/she is showing a consistent competence in a given task. Where a student is unsuccessful in achieving an Outcome, provision should be made for remediation and reassessment.

09/02/98 EMacD/KE