-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	**0064101**	**-Session-1986-87**
-Superclass-	**XJ**	
-Title-	**ELECTRICAL HAND SKILLS**	

-DESCRIPTION-

Type and Purpose	A general module, which provides the necessary hand skills required to install PVC sheathed cables and to carry out basic operations associated with electrical installation work.
Preferred Entry Level	Standard Grade Science at Grade 5 or better.
Learning Outcomes	The student should: 1. be able to select the appropriate tools for terminating and installing cables and identify common electrical accessories and their functions; 2. be able to demonstrate handling and installation skills for single core and multi- core PVC sheathed cables; 3. be able to demonstrate measuring, cutting to length, installing and terminating PVC sheathed cables to form circuits; 4. be able to demonstrate the common methods of material joining used in electrical installation work; 5. be able to demonstrate the soldering of metalwork, and passive components used in electronic circuitry.

Content/ Context

Corresponding to the Learning Outcomes:

1. tools associated with basic handskills: to include pliers, screwdrivers, hammer, knife, side-cutter and rule. Accessories and equipment used with PVC cable. Cable sizes, appreciation of loading capacity.

2. use of hand skills to include work with cables, terminating jointing, and the use of the junction box. Clipping and bending exercises using PVC sheathed cables. Cable lacing and harnessing. Termination of cable to: ceiling rose, lampholder, 13A plug top, 1 - way switch, 13A socket outlet and to control equipment, i.e. switchfuse or consumer unit;

3. basic lighting and power circuitry. The essentials for basic circuitry. Terminations and means of assuring earth continuity. Lighting exercises involving 1 light 1 switch, 2 lights 1 switch, 2 one way switches each controlling a light, 2-way switching, the conversion 2 - way circuit and intermediate switching. Use of junction box system. Radial and ring power circuits;

4. screw thread joining, nuts and bolts, tapped holes, self-tapping screws, captive nuts. Typical thread patterns, e.g. BA, metric, Whitworth, etc. Advantages and limitations of locknuts, wing nuts, plains washers, spring washers, rivets and rivet head types, e.g. solid, tubular, pop, snap pan and flat countersunk. Exercises involving materials joining using tin, steel, aluminium, wood, tufnol, brass and copper.

5. basic soldering techniques. Solders and fluxes. Need for cleanliness. Safety precautions. Requirements for soldered joints. Soldering exercises using metalwork and passive components connected to tag pins.

Suggested Learning and Teaching Approaches

This module can be carried out totally within the workshop environment, with demonstration of safe working practices, and tuition in the correct procedure to be carried out when operating on individual exercises.

The small amount of non-practical work of the module can be achieved by discussion in the workshop and with the use of a log-book to record the main points relative to each category of work carried out in the workshop.

All learning outcomes should be combined in the form of practical projects.

It is suggested that all the practical work be assessed using a grid format, with each exercise sub-divided into assessable sections so that the students' abilities are continually recorded and assessed.

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 IA(1)Observations checklist/oral test.

PC Using a Tools Identification Panel, e.g. 12 selected tools on a panel which are associated with electrical installation basic hand skills, the student correctly identifies 10 of the tools.

IA(2)Observations checklist/ oral test

PC Using an Accessories Identification Panel, e.g. 12 selected accessories with electrical installation basic hand skills, the student correctly identifies 10 of the accessories and states the function of each accessory.

LO2-6 IA Finished articles

PC The student successfully completes a series of practical exercises in which:

(a) soldering is neat and accurate;
(b) components and tools are handled correctly;
(c) components are mounted correctly according to given instructions;
(d) proper procedures are observed.

02/10/98 JH/AV