

-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

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

NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number-	0084352	-Session-1988-89
-Superclass-	WH	
-Title-	STITCHOLOGY AND THREAD CONTROL	
-DESCRIPTION-		
Purpose	<p>This module designed to extend the student's knowledge of the laws governing stitch formation and the control of thread as it passes through the machine to the fabric.</p> <p>It is intended that this module is taught in conjunction with other related modules to form part of a programme of study which should include complementary industrial experience.</p> <p>It is aimed at those following a career in clothing machine engineering.</p>	
Preferred Entry Level	Standard Grade in Mathematics at 3 Standard Grade in Science at 3 Standard Grade in English at 3	
Learning Outcomes	<p>The student should:</p> <ol style="list-style-type: none">1. explain the basic machine construction and functional elements relating to the basic laws and principles of stitch formation;2. outline the different stitch type groups and their characteristics as formed by the stitch forming implements;3. examine the thread handling and control systems of lockstitch and chainstitch machines;4. investigate the interaction between the various stitch forming implements and the feed mechanism of a selected machine.	

Content/
Context

Safety and safe working practices should form an integral part of the exercise during investigation of practical machine adjustments and the effects produced in relation to the actual sewing performance of the selected chainstitch machines.

Corresponding to Learning Outcomes 1-4:

1. Industrial sewing machines:
 - (a) structure: main functional elements, horizontal and vertical arms, machine bed, throat plate, presser foot, feed dog, tension assembly needle.
 - (b) loop formation and construction and use of BS 3870 stitch type groups.
2.
 - (a) stitching component assemblies required to produce BS 3870 stitch type groups;
 - (i) oscillating shuttles;
 - (ii) rotating hooks;
 - (iii) oscillating and rotating looper (spreaders)
 - (b) advantages and disadvantages of stitch types, eg BS 101, 301, 401 and 500 series for sewing operations.

Specification details to include: stitch density, stitching line position, stitch line variation, tolerances associated with garment quality.

3. Examination in detail of tension assemblies of:
 - (a) lockstitch machines - passive control
 - (b) chainstitch machines - active control
 - (c) check and nipper springs

Thread control systems:

lockstitch take-up levers:

- (i) link type;
 - (ii) sleeve type;
 - (iii) rotary type;
 - (iv) cam and lever type chainstitch, pull-offs
- (i) rotary;
 - (ii) reciprocating;
 - (iii) thread wires and eyelets

4. Examination of machines sewing performance in relation to adjustment and interaction of the various stitching and feeding mechanisms and their effects on stitch formation.
 - (i) stitch density;
 - (ii) stitch balance;
 - (iii) seam balance - pucker;
 - (iv) structural jamming;
 - (v) thread stretch and recovery

Suggested
Learning and
Teaching
Approaches

This module should be presented in the sewing classroom/workshop where the tutor will carefully explain and demonstrate the various techniques of how the basic stitches are formed. Prepared samples should be available for examination and comparison.

Each stitch type, together with appropriate assembly methods, should be demonstrated and followed by individual exercises to increase the student's awareness of the criteria for stitch type selection.

Student activities should be essentially centred on practical exercise assignments and the tutor would be expected to prepare precise briefs for each assignment exercise. Students should build up a folio of samples and be encouraged to make simple sketches of stitches.

Machine types should be demonstrated where possible. Students should be allowed to use equipment where available and when time permits. The operational principles of machines may be demonstrated by hand turning the machine or viewing a film/video.

The student should follow an activity based learning approach to become familiar with the BS stitch types produced by selected machines.

In the initial stages the tutor should fully explain and demonstrate the formation of each stitch type, operation or process required to produce stitches in question. Terminology and principles should be introduced in the context of the exercises. A set of completed exercises should be available for the students to relate and compare standards.

Following initial instruction in the use of BS stitch symbols and numbers, students may work in small groups to plan detailed assembly instructions and quality specifications for garment construction and seam joins as well as basic machine features. Time spent on note taking should be minimised by using handouts or incomplete diagrams.

Safety, safe working practices, care and use of equipment should be an integral part of all module activities.

Assessment
Procedures

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 EXPLAIN THE BASIC MACHINE CONSTRUCTION AND FUNCTIONAL ELEMENTS RELATING TO THE BASIC LAWS AND PRINCIPLES OF STITCH FORMATION

PC The student:

- (a) identifies the main features of the machine;
- (b) identifies the functional elements relating to thread control and stitch formation;
- (c) identifies the configuration of BS stitch types 101, 301, 304, 401, 500.

IA Assignment

The student will be set an assignment to test comprehension of basic machine construction and functional elements in relation to stitch formation.

The student will be required to sketch and annotate outline diagrams of 4 given industrial sewing machines showing functional element relating to thread control and stitch formation. The student will also be required to sketch the configuration of 4 BS stitch types and to produce samples of these on stitch boards.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all the performance criteria for each of the exercises in the assignment.

LO2 OUTLINE THE DIFFERENT STITCH TYPE GROUPS AND THEIR CHARACTERISTICS AS FORMED BY THE STITCH FORMING IMPLEMENTS

PC The student:

- (a) identifies the specific stitching components of the machine using the actual stitch types for reference;

- (b) states which stitch forming implement produces a given BS stitch types;
- (c) lists the advantages and disadvantages of BS stitch types;
- (d) lists the sewing operations for which each stitch type is used.

IA Assignment

The student will be presented with incomplete handout sheets containing 5 unfinished sketches for the student to complete; 5 diagrams of stitch types BS 101, 301, 304, 401 and 500 series requiring labels and 15 short answer questions allocated as follows:

- (a) matching of stitch forming implement with BS stitch type 5 questions;
- (b) advantages/disadvantages of BS stitch types 5 questions;
- (c) sewing operations 5 questions.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student correctly identifying 4 stitching components on the sketches and diagrams, and correctly answering 12 questions including four each from (a), (b) and (c) above.

LO3 EXAMINE THE THREAD HANDLING AND CONTROL SYSTEMS OF LOCKSTITCH AND CHAINSTITCH MACHINES

PC The student:

- (a) examines the thread tension assemblies from selected machine types for correct alignment;
- (b) makes minor adjustments to main tension assembly, nipper and check springs.

IA Assignment

The student will be set an assignment to test understanding of thread handling and control systems and ability to make appropriate adjustments for given conditions.

The student will be required to adjust the thread control systems within selected machine types to ensure correct sewing performance.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student producing a sample showing a well-balanced, correctly formed stitch.

LO4 INVESTIGATE THE INTERACTION BETWEEN THE VARIOUS STITCH FORMING IMPLEMENTS AND THE FEED MECHANISM OF A SELECTED MACHINE

PC The student:

- (a) sets the machine up for a specified sewing task;
- (b) notes the interaction between the fabric and the feed mechanisms;
- (c) examines a seam for deformation of fibres and takes appropriate remedial action;
- (d) states the effect caused by structural jamming.

IA Assignment

The student will be set an assignment to test ability to relate the sewing performance of a selected machine to the adjustment and interaction of the various stitching and feeding mechanisms and their effects on stitch formation.

The student will be required to prepare a selected sewing machine for a given sewing operation and produce a stitch sample. The sample will then be examined for stitch and seam defects which the student will be required to adjust and correct as necessary.

Satisfactory achievement will be demonstrated by the student meeting all the performance criteria and producing a sewn sample which meets the given requirements.