

-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

**Hanover House
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NATIONAL CERTIFICATE MODULE DESCRIPTOR

-Module Number- 0095601 -Session-1989-90
-Superclass- TD

-Title- CONSTRUCTION DRAWING 1: AN INTRODUCTION
(x¹/₂)

-DESCRIPTION-

Purpose This module is designed to introduce a student to the precision skills required to draw plane figures, three dimensional shapes and pictorial views. It may be of interest to those following a career in construction which uses drawing as a graphical means of communication.

Preferred Entry Level No formal entry requirements

Learning Outcomes The student should:

1. set out and draw to scale plane figures;
2. set out and draw to scale in 1st angle orthographic projection from 3 dimensional shapes;
3. set out and draw to scale 3 dimensional shapes in isometric and oblique projection;
4. set out and draw pictorial views using isometric paper.

Content/ Context Corresponding to Learning Outcomes 1-4:

1. Equipment: set square 30, 45 and 60 degree; tee square, eraser, compasses, protractor, scale rule, pencil 2H and 3H, soft pencil, drawing board, cartridge paper, masking tape, drawing clips, pencil sharpener, dividers, cleaning equipment.

Drawing sheet layout: title boxes, x - y axis, British Standard (BS) 1192 parts 1, 2 and 3 and BS 308. Major and minor axes, lettering, trammel and practical method.

Angles, lines, triangles, quadrilaterals, circles, 5 - 9 sided polygons; ellipses.

2. 1st angle orthographic projection, methods of projection, projection symbols. Scales, x - y axis.
3. Isometric projection, oblique projection in cabinet and cavalier, planometric projection.
4. Isometric paper and free hand sketching.

Suggested
Learning and
Teaching
Approaches

It is envisaged that this module would be studied in conjunction with craft modules and act as a supportive communications link.

The requirements of BS 1192 and BS 308 should be evolved to produce lines, scaled drawings, components and materials.

The early establishment of good routine and practice will foster attitudes of care and cleanliness.

Emphasis should be placed on the relationship between drawing as a communications skill and technology generally. This should develop an appreciation of the servicing and support available to industry through the drawing medium. Site and factory visits and talks with drawing users should be encouraged to establish a strong manufacturing link.

Engineering and construction applications within the learning environment should be related, where possible to examples within the construction industry.

Assessment
Procedures

Acceptable performance in the module will be satisfactory achievement of all 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 SET OUT AND DRAW TO SCALE PLANE FIGURES

PC The student:

- (a) selects equipment appropriate to the task;
- (b) lays out drawing sheet with title panel set out to correct position and size in accordance with appropriate BS;
- (c) sets out and bisects lines and angles in triangles accurately using compasses;
- (d) sets out and draws accurately to scale a range of plane figures;
- (e) produces neat and clean drawings(s);
- (f) maintains drawing equipment in good condition.

IA Practical Exercise

The student will be set a practical exercise consisting of 6 graphical tasks to test the application of knowledge and skills required to set out and draw to scale plane figures.

The student will be provided with the appropriate dimensions and will be required to produce a scaled drawing for each of the following:

- (i) scalene triangle with each angle bisected to indicate centre point
- (ii) isosceles triangle
- (iii) quadrilateral
- (iv) circle
- (v) hexagon
- (vi) ellipse

Satisfactory achievement of the Learning Outcome will be based on all performance criteria being met. This will be demonstrated by the student producing drawings for each of (i) and (ii) above meeting performance criteria (a), (b), (c), (d), (e) and (f) and by the student producing drawings for each of (iii) to (vi) above meeting performance criteria (a), (b), (d), (e) and (f).

LO2 SET OUT AND DRAW TO SCALE IN 1ST ANGLE ORTHOGRAPHIC PROJECTION FROM 3 DIMENSIONAL SHAPES

PC The student:

- (a) selects equipment appropriate to the task;
- (b) lays out drawing sheet with title panel set out to correct position and size in accordance with appropriate BS;
- (c) sets out and draws accurately to scale in 1st angle orthographic projection from 3 dimensional shapes;
- (d) produces neat and clean drawing(s);
- (e) maintains drawing equipment in good condition.

IA Practical Exercise

The student will be set a practical exercise consisting of one graphical task to test the application of knowledge and skills required to set out and draw to scale in 1st angle orthographic projection from 3 dimensional shapes.

The student will be given an isometric view of a rectangular component with a rebated edge and will be required to set out and draw the given component to a defined scale in 1st angle orthographic projection.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all the performance criteria.

LO3

SET OUT AND DRAW TO SCALE 3 DIMENSIONAL SHAPES IN ISOMETRIC AND OBLIQUE PROJECTION

PC The student:

- (a) selects equipment appropriate to the task;
- (b) lays out drawing sheet with title panel set out to correct position and size in accordance with appropriate BS;
- (c) sets out and draws accurately to scale 3 dimensional shapes in
 - (i) isometric projection
 - (ii) oblique projection;
- (d) produces neat and clean drawing(s);
- (e) maintains equipment in good condition.

IA Practical Exercise

The student will be set a practical exercise consisting of 3 graphical tasks to test the application of knowledge and skills required to set out and draw to scale 3 dimensional shapes in isometric and oblique projection.

The student will be given an orthographic drawing of a rectangular shaped component with a square recess on the upper face. Using the given drawing, the student will set out and draw to scale the component in:

- (i) isometric projection
- (ii) oblique cabinet projection
- (iii) oblique planometric projection

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all the performance criteria.

LO4 SET OUT AND DRAW PICTORIAL VIEWS USING ISOMETRIC PAPER

PC The student:

- (a) selects equipment appropriate to the task;
- (b) determines proportions from a given specification;
- (c) draws pictorial views from a given specification;
- (d) produces neat and clean drawing(s);
- (e) maintains drawing equipment in good condition.

IA Practical Exercise

The student will be presented with a practical exercise consisting of one graphical task to test the application of knowledge and skills required to set out and draw pictorial views using isometric paper.

The student will be provided with a drawing of a component and a specification detailing its length, width and height. Using isometric paper and the appropriate instruments, the student will be required to produce a pictorial proportional view of the given component.

Satisfactory achievement of the Learning Outcome will be demonstrated by the student meeting all the performance criteria.