

-SQA-SCOTTISH QUALIFICATIONS AUTHORITY

HIGHER NATIONAL UNIT SPECIFICATION

GENERAL INFORMATION

-Unit Number- **3471587**
-Superclass- **RC**
-Title- **PHYSICS FOR BEAUTY THERAPY**

-DESCRIPTION-

GENERAL COMPETENCE FOR UNIT: Linking the underlying principles and applications of physics in relation to Beauty Therapy.

OUTCOMES

1. apply the principles of electromagnetic radiation to instruments and treatments used in the beauty treatment salon;
2. describe and explain the underlying principles of electricity and electrical safety;
3. apply the principles of electricity and magnetism to the instruments in the salon.

CREDIT VALUE: 1 HN Credit

ACCESS STATEMENT: Access to this unit is at the discretion of the centre.

For further information contact: Committee and Administration Unit, SQA, Hanover House, 24 Douglas Street, Glasgow G2 7NQ.

Additional copies of this unit may be purchased from SQA (Sales and Despatch section). At the time of publication, the cost is £1.50 (minimum order £5.00).

HIGHER NATIONAL UNIT SPECIFICATION**STATEMENT OF STANDARDS****UNIT NUMBER:** 3471587**UNIT TITLE:** PHYSICS FOR BEAUTY THERAPY

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 standards are mandatory and cannot be altered without reference to SQA.

OUTCOME

1. APPLY THE PRINCIPLES OF ELECTROMAGNETIC RADIATION TO INSTRUMENTS AND TREATMENTS USED IN THE BEAUTY TREATMENT SALON

PERFORMANCE CRITERIA

- (a) Describe the radiation types which constitute the electromagnetic spectrum.
- (b) Describe the generation and properties of UV accurately.
- (c) Describe the generation and properties of infra-red radiation accurately.
- (d) Describe the physiological effects of infra-red radiation accurately.
- (e) Describe the physiological effects of UV accurately.
- (f) Descriptions of colour mixing processes in terms of visible light and pigment colours are correct.
- (g) Describe the component colours of white light.

RANGE STATEMENT

Electromagnetic spectrum: relative energies; frequencies and wavelengths; infra-red and ultraviolet production; emission and propagation; physiological effects.

Colour mixing processes: primary; complementary pigments and rays.

EVIDENCE REQUIREMENTS

Written and/or oral evidence that the candidate has the ability to:

- (i) describe the generation, application and properties of UV;
- (ii) describe the generation, application and properties of IR;
- (iii) describe colour production in terms of reflection and absorption of light;
- (iv) describe colour mixing processes involving filters, pigments and different coloured light sources.

OUTCOME

2. DESCRIBE AND EXPLAIN THE UNDERLYING PRINCIPLES OF ELECTRICITY AND ELECTRICAL SAFETY

PERFORMANCE CRITERIA

- (a) Explain the principles of static and current electricity.
- (b) Explain how direct current and alternating currents are produced.
- (c) Demonstrate competence in calculations involving electrical quantities.
- (d) Describe the underlying principles of electrical supplies.

RANGE STATEMENT

Production of static electricity: distribution of charge in an atom; attraction; repulsion; causes.

Current electricity: flow of charge; potential difference; resistance.

Direct current: electrodes; chemically maintained.

Alternating current: magnetic fields; motion; frequency; peak and root mean square.

Electrical calculations: ohm's law; power; energy; kilo watt hours; costings.

Electrical supplies: ring main; lighting; heating.

EVIDENCE REQUIREMENTS

Written and/or oral evidence that the candidate has the ability to:

- (i) distinguish between static and current electricity;
- (ii) describe the AC and DC generation processes and identify the appropriate oscilloscope traces;
- (iii) calculate currents, voltages, resistance and power for electrical appliances and identify correct fuse values;
- (iv) describe ring mains circuit used in the salon;

OUTCOME

3. APPLY THE PRINCIPLES OF ELECTRICITY AND MAGNETISM TO THE INSTRUMENTS IN THE SALON

PERFORMANCE CRITERIA

- (a) Describe the production properties and use of galvanic currents in the beauty salon.
- (b) Describe the production properties and use of faradic currents in the beauty salon.
- (c) Describe the production properties and use of high frequency currents in the beauty salon.

RANGE STATEMENT

Galvanic currents: anode; cathode; ions; electrolysis and electrolytes; epilation; iontophoresis; desincrustation; physiological effects.

Production of low voltage D.C.: using transformer; rectifier and capacitor.

Faradic currents: interrupted; instrument controls; physiological effects.

Production of interrupted D.C. using make and break with coupling transformer.

High frequency currents: ranges of frequency;

Production of high frequency using an inductor/capacitor tuned circuit.

EVIDENCE REQUIREMENTS

Written and/or oral evidence that the candidate has the ability to:

- (i) demonstrate an understanding of galvanic therapy as applied to epilation, iontophoresis and desincrustation;
- (ii) correctly describe the production of galvanic current in the salon;
- (iii) understand the mechanism of application and physiological effects of faradic treatments;
- (iv) correctly describe the production of faradic current;
- (v) correctly describe the production of high frequency current;
- (vi) distinguish between the output waveforms from galvanic, faradic and high frequency instruments.

MERIT A candidate who achieves all performance criteria for all outcomes will be awarded a pass in the unit.

Pass with merit may be awarded to a candidate who achieves all outcomes and in doing so consistently demonstrates superior performance when, for example:

- (a) demonstrating clarity of expression and presentation;
- (b) integrating knowledge in completing analytical processes;
- (c) using information from a diverse range of sources;
- (d) demonstrating a greater grasp of concepts or depth of underpinning knowledge.

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.

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HIGHER NATIONAL UNIT SPECIFICATION**SUPPORT NOTES**

UNIT NUMBER: 3471587

UNIT TITLE: PHYSICS FOR BEAUTY THERAPY

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.

PURPOSE This unit is intended to link the underlying principles and applications of physics in relation to Beauty Therapy.

CONTENT/CONTEXT The following information specifies in greater detail the context in which the outcomes and performance criteria are to be achieved. The unit is intended to provide candidates with the necessary knowledge to form a basic understanding of the principles of physics related to the instruments, treatments, and conditions in the beauty salon.

Corresponding to outcomes:

1. Terms: absorption of ultra violet, wavelength limits and properties of UVA/UVB/UVC; benefits and hazards of UV; Infra-red: luminous/non-luminous generators; description and wavelength range; properties of electromagnetic waves; speed; wavelength; frequency; spectrum; UV; IR and visible light. Primary and complementary colours; inverse square law.
2. Terms: charge; static electricity; electric and magnetic field; conductors; electric current; voltage; resistance; energy and power; mains power supply; ring main circuit and fuse.
3. Terms: amplitude; frequency; iontophoresis; desincrustation; epilation; electrodes; electrolyte; ions; transformer; diode; full wave and half wave rectification; smoothing capacitor; ammeter; interrupted D.C.; applied frequencies; intensity; pulse width; unipolar and bipolar; range of pulse frequencies; stimulation and relaxation periods.

Tuned circuit: oscillation; inductor; capacitor; active and passive electrodes; ozone production; sparking discharge; short wave diathermy.

ASSESSMENT PROCEDURES

Short answer questions

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.

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