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Diploma in Ophthalmic Dispensing Syllabus 2015

Conditions of Admission

Theoretical and Practical Assessment Requirements
Core Competencies

Level 6 Diploma in
Ophthalmic Dispensing (QCF)

Association of British Dispensing Opticians

Level 6 Diploma in Ophthalmic Dispensing

Examinations

Conditions of admission

A. The minimum entry standard is the achievement of grade C or higher in the General Certificate of Secondary Education in the following subjects:

- Mathematics
- English
- a science based subject, and
- two other subjects

The ABDO awarding body may consider the results obtained in an equivalent examination. The teaching institutions may require a higher standard for admission to their courses.

The ABDO awarding body may agree to waive this educational requirement in respect of persons who have had at least ten years practical experience in optics.

B. Students must generally be training in the practice of ophthalmic dispensing in a suitable, pre-approved environment such as an ophthalmic practice or a hospital clinic, under the supervision of a suitably registered practitioner.

C. The Final Qualifying Examination (FQE practical) may be taken on completion of at least three years of study undertaken at a General Optical Council approved teaching institution.

D. It is a requirement of the General Optical Council (GOC) that those seeking registration must have had at least 1,600 hours supervised experience in practice, which the examining body is required to certify prior to sitting the FQE.

E. To be able to make this certification ABDO lays down a schedule of work and experience, which the student must undergo during the Pre-Qualification Period (PQP). The schedule is sent to the student and on receipt, the registered Supervisor must complete an undertaking that the work and experience detailed will be given.

On conclusion of the period the supervisor then declares that the work schedule required has been observed.

F. **Note:** The PQP may commence from the start of the ophthalmic dispensing course, subject to receipt of supervisor declaration, and the date of commencement issued by ABDO. It is therefore important, and in the student's interest, that ABDO is notified of the name and address of their supervisor and practice immediately when a post is obtained.

G. Certain assessments taken at training institutions may form an exemption to one or more theoretical units and therefore students should understand that membership of both the ABDO and GOC must be continuous throughout their period of study in order for those assessments to be considered part of the final award.

H. The student acknowledges and accepts the conditions governing issue of diplomas, such as a lapse in ABDO membership would mean that the suffix FBDO could no longer be used and the diploma will need to be returned to ABDO.

Exemptions

Any exemptions from ABDO's examinations shall be at the discretion of the director of professional examinations in each individual case.

There are **no** exemptions from unit 2, Ophthalmic dispensing practice and unit 12 Advanced ophthalmic dispensing practice. Any exemptions from the remaining units would only be considered in conjunction with the GOC, on receipt of a written application and submitted evidence.

Re-admission to examinations

Practical/Theory examinations

Students who fail one or more units three times will not be admitted for re-examination until they have furnished proof that a further period of sustained study has been undertaken as approved by the director of professional examinations. One further attempt will then be allowed.

Syllabus Index

The maximum number of attempts at a unit of the syllabus taken as a whole, or in parts, is FOUR.

Students should be aware that there is a seven year rule in effect of examination results where the diploma has not been awarded. This ruling commences from the first examination sat. ABDO will endeavour to contact students who are at risk of results expiring.

The syllabus is reviewed on a quinquennial basis. Any changes to the examination content or format will be published in the optical press and affected students will receive direct correspondence from ABDO to the address on the membership database.

Four successive attempts will be offered at the current syllabus before changes are made, over a two-year period.

Closing dates

The closing dates for examination applications are published on the examinations section of the ABDO website. Application forms can be downloaded.

Boards of examiners

There are two examination boards that contribute to the awarding of the Level 6 Diploma in Ophthalmic Dispensing, in accordance with the published assessment regulations. The examination board for theory examinations is responsible for all theory results and the examination board for practical examinations is responsible for all practical results.

GOC core competency mapping

The GOC core competencies can be found mapped against each part of the syllabus in blue. The competencies shown relate to the teaching, and may not necessarily indicate where a competency is signed off.

Where a competency is not mapped against the syllabus, the learning outcome will still be assessed as certain background knowledge is essential in order to be able to demonstrate competence in the nine areas.

Syllabus unit titles and qualifying examinations

Preliminary qualifying examination

Final qualifying examination

Practical Examinations

Examination Format

Unit	Title	Format	Time allowed
YEAR ONE			
1a	Theory of General Optics	*A combined theory examination of six written questions to be attempted from a choice of eight.*	**3 hours**
1b	Theory of Ophthalmic Lenses		
2	Ophthalmic Dispensing Practice	*Preliminary Qualifying Examination (PQE), a combination of practical and viva examinations.*	**3½ hours**
YEAR TWO			
3	Theory of Ophthalmic Dispensing	*A combined theory examination of six written questions to be attempted from a choice of eight.*	**3 hours**
4	Advanced Theory in Ophthalmic Lenses		
5	Abnormal Ocular Conditions and Standards of Practice	*A combination of theory examination, practice visit assessment and Unit 12 Final Qualifying Examination (FQE) practical examination.*	**2 hours**
6	Ocular Anatomy	A written examination consisting of MCQ and short answer questions.	**1 hour**
7	Paediatric Dispensing	*A combination of work based practice visit assessment and FQE practical examination.*	
8	Communication in Ophthalmic Dispensing	*A combination of work based practice visit assessment and FQE practical examination.*	
YEAR THREE			
9	The Assessment and Management of Refractive Errors	*A written examination consisting of Theory questions, MCQ and short answer questions.*	**2 hours**
10	Low Vision in Ophthalmic Dispensing	*A combination of theory examination and FQE practical examination.*	**2 hours**
11	The Basic Principles of Contact Lens Wear	A written theory examination.	**1 hour**
12	Advanced Ophthalmic Dispensing Practice	*Final Qualifying Examination (FQE) a combination of practical and viva examinations.*	**5 hours**

Theory of General Optics

Unit 1a

A. Propagation of light formation

The expected learning outcome is that the student should appreciate

(i) 'Light travels in a straight line'.
(ii) The formation of shadows.

Students will be expected to:

A.1 Describe continuous waves and wave pulses.

A.2 Draw a graph of displacement against time and displacement against distance for a continuous wave.

A.3 Define the terms velocity, frequency, wavelength and amplitude.

A.4 Differentiate between waves which are transverse and those which are longitudinal.

A.5 Recall and use the relationship:

velocity = frequency x wavelength.

A.6 Understand what is meant by a wavefront.

A.7 Explain Huygens' construction and the term secondary wavelets.

A.8 Draw diagrams using groups of rays and wavefronts to illustrate converging, diverging and parallel pencils of rays.

A.9 Define the term vergence and explain the associated sign convention.

A.10 Define the unit for vergence.

A.11 Define the term curvature of a wavefront and explain the associated sign convention.

A.12 Distinguish between a point source and an extended source.

A.13 Draw a diagram showing the formation of umbra from a point source situated in front of an obstacle.

A.14 Draw a diagram showing the formation of umbra and penumbra from an extended source smaller than the obstacle.

A.15 Draw a diagram showing the formation of a shadow produced by an extended source, larger than the obstacle.

A.16 Solve problems by means of similar triangles or formulae to obtain the dimensions of the umbra and penumbra.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

A.17 Draw a diagram showing the formation of the image produced by a pinhole camera.

A.18 List the properties of the image produced by a pinhole camera.

A.19 State what effect varying the size and shape of the pinhole will have on the image properties.

Related GOC core competency

B. Reflection

The expected learning outcome is that the student understands the formation of the images produced by reflection at plane and curved mirrors.

This section provides grounding knowledge for core competencies covered later in the syllabus.

Students will be expected to:

B.1 Explain the difference between regular (specular) and diffuse reflections.

B.2 Define the terms incident ray, normal and reflected ray.

B.3 Recall the laws of reflection.

B.4 Construct a ray diagram showing the formation of a virtual image produced by a plane mirror.

B.5 List the characteristics of the image formed by a plane mirror.

B.6 Solve geometrical problems on the size and position of the image produced by a plane mirror.

B.7 State the relationship between the angle of rotation of a mirror and the angle of rotation of the reflected ray.

B.8 Describe convex and concave spherical mirrors.

B.9 Define the terms pole (or vertex), centre of curvature, principal axis, and radius of curvature of a curved mirror.

B.10 Define the terms principal focus and focal length of convex and concave mirrors.

B.11 Derive the relationship between focal length and radius of curvature.

B.12 Recall the construction rays necessary to construct ray diagrams (to scale) to show the formation of images produced by curved mirrors and to use these rays to produce diagrams for the images produced by all possible positions of the object.

B.13 Show that there is only one type of image, for all positions of a real object, produced by a convex mirror.

B.14 Derive the mirror formulae.

B.15 Use the mirror formulae to solve numerical problems.

B.16 Apply the conjugate foci relationship to solve mirror problems and to recall that:

$$F = -\frac{n}{f} \quad \text{or} \quad F = -2nr$$

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

C. Refraction at a plane surface

The expected learning outcome is that the student appreciates that light may bend when travelling from one medium to another and can recognise the phenomenon of total internal reflection.

Students will be expected to:

C.1 Define the terms incident, normal and refracted ray, angle of incidence and angle of refraction.

C.2 Recall the laws of refraction.

C.3 Explain the terms relative refractive index and absolute refractive index.

C.4 Use a graphical construction for a ray trace for refraction.

C.5 Apply the formula: $${}_{a}n_{g} = \frac{1}{{}_{g}n_{a}}$$

C.6 Draw a diagram showing refraction produced by a parallel sided glass block.

C.7 Calculate refraction produced by a parallel sided glass block.

C.8 Calculate the lateral and horizontal displacement produced by refraction through a parallel sided glass block.

C.9 Derive the general form of Snell's Law.

C.10 Solve problems using Snell's Law.

C.11 Show that refractive index of medium in air is equal to real thickness divided by reduced thickness.

This section provides grounding knowledge for core competencies covered later in the syllabus.

C.12 Recall that the apparent thickness of several layers of different parallel sided media is equal to the sum of the individual reduced thicknesses.

C.13 Define critical angle.

C.14 Show that: $\sin i_c = \frac{n'}{n}$

and use this to calculate various values of i_c.

C.15 Draw a ray diagram illustrating total internal reflection.

C.16 Explain the formation of a mirage and the basis of fibre optics in terms of total internal reflection.

C.17 Explain the terms prism, principal section of a prism, refracting faces of a prism and apical angle of a prism.

C.18 Construct a ray trace through a triangular prism and demonstrate use of the formula:
$d = i_1 + i'_2 - a$

C.19 Use Snell's Law and the formula in C17 to calculate values of deviation for given values of incidence.

C.20 Use Snell's Law and recall that $a = i_1 + i'_2$ to calculate values of angle of incidence for a given angle of deviation or given angle of incidence/refraction at the second surface

C.21 Interpret a graph of angle of deviation against angle of incidence, indicating minimum deviation.

C.22 Recall that at minimum deviation the ray of light travels symmetrically through the prism.

C.23 Define minimum deviation for a prism.

C.24 Use the minimum deviation equation to find n.

C.25 Solve numerical examples, which involve total internal reflection occurring in the prism.

C.26 Trace a ray through a small angled prism.

C.27 Draw a diagram showing the appearance of an extended object viewed through a prism (e.g. a long horizontal line parallel to the prism apex).

C.28 Explain in simple terms dispersion through a prism and understand the basis of chromatic aberration.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

Theory of General Optics

Unit 1a - continued

D. Refraction at curved surfaces

The expected learning outcome is that students should understand the formation of images by converging and diverging lenses, be familiar with various forms and the concept of the equivalent thin lens.

Students will be expected to:

D.1 Define converging and diverging spherical refracting surfaces.

D.2 Define the terms vertex, centre of curvature, and principal axis of a surface.

D.3 Derive the fundamental paraxial equation for refraction at a single spherical surface.

D.4 Recall the sign convention applied to distances and angles associated with refraction at a single spherical surface.

D.5 Define the power of a refracting surface and recall that:
$F = (n' - n)/r$

D.6 Define linear magnification and calculate its value.

D.7 Calculate the powers of convex and concave surfaces.

D.8 Calculate image position and image size by means of the fundamental paraxial equation and magnification formulae.

D.9 Describe the nature of an image.

D.10 Draw diagrams illustrating the first and second focal lengths of converging and diverging surfaces.

D.11 Apply Newton's equation for a single refracting surface. Use this equation to solve numerical examples.

D.12 Recall the construction rays necessary to draw ray diagrams to scale to show the formation of images produced by a single convex refracting surface and by a single concave refracting surface and to use these rays to produce diagrams for the images produced by all possible positions of the object.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

E. Thin lenses

The expected learning outcome is that students should be able to:

E.1 Describe various converging lens forms and diverging lens forms.

This section provides grounding knowledge for core competencies covered later in the syllabus.

E.2 Use diagrams to explain the prismatic representation of converging and diverging lenses.

E.3 Define the terms front vertex, back vertex, optical axis (or principal axis), centre thickness of a lens and radii of curvature of front and back surfaces, centres of curvature of front and back surface.

E.4 Define the term optical centre.

E.5 Draw diagrams showing the positions of the first and second principal focal points and the first and second focal lengths for both converging and diverging lenses.

E.6 Recall the construction rays necessary to draw ray diagrams to show the formation of images produced by a single thin converging or diverging lens for all possible positions of the object and describe the nature of the image.

E.7 Apply the conjugate foci formula for a single thin lens.

E.8 State the equation giving the power of a thin lens in air in terms of its surface curvatures or radii of curvature

E.9 Recall that:

$$F = \frac{-n_s}{f} \quad \text{and} \quad F = \frac{n_s}{f'}$$

Where ns is the refractive index of the surrounding medium.

E.10 Derive an expression for linear magnification for a single thin lens.

E.11 Relate the position of a single thin lens to the concept of effectivity.

E.12 Apply Newton's equation for a single thin lens.

E.13 Appreciate that it is possible to replace a system of separated thin lenses with an equivalent thin lens.

Related GOC core competency

F. Photometry

The expected learning outcome is that students should be able to:

F.1 Define the illuminance at a point on a surface.

F.2 Recall levels of illuminance required for specific job applications.

F.3 Recall the laws of photometry, and use the resulting equations to solve numerical problems.

This section provides grounding knowledge for core competencies covered later in the syllabus.

Theory of General Optics

Unit 1a - continued

F.4 Define the quantity reflectance and solve numerical problems involving this quantity.

F.5 Define transmittance of a transparent body (and be familiar with the fact that this varies according to wavelength of radiation used) and solve numerical problems involving this quantity.

Related GOC core competency

G. Colour

The expected learning outcome is that students should be able to:

G.1 Define hue, luminosity and saturation.

G.2 State the limits of the visible spectrum.

G.3 Relate the colour sense to wavelength, indicating approximately the 'blue, green and red' regions of the spectrum.

G.4 Define the terms pure and impure colour, vivid and pastel shades and bright and dark colours.

G.5 Define primary and complementary colours.

This section provides grounding knowledge for core competencies covered later in the syllabus.

ASSESSMENT FORMAT			
Unit	1a		
Title	Theory of General Optics		
Format	A combined theory examination (with Unit 1b Theory of Ophthalmic lenses) of six written questions to be attempted from a choice of eight		
Time allowed	3 hours	**Theoretical pass mark**	40%
Year	1		

A. Interpupillary and centration distances

The expected learning outcome is the student should be able to describe how to measure interpupillary distance, binocular and monocular, and near centration distance.

Students will be expected to:

A.1 Define interpupillary distance [PD].

A.2 Define near centration distance [NCD].

A.3 Explain, with diagrams, how to measure the distances described in A1 and A2.

A.4 Explain how to measure the PD of a patient with strabismus.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

B. Lens measure data

The expected learning outcome is that the student should appreciate the different types of materials used in lens manufacture. They should be aware of some of the important physical properties of the material i.e. density, Abbe number, refractive index, curve variation factor.

Students will be expected to:

B.1 Describe the important physical properties of the various materials from which specific lenses are made.

B.2 Give typical values for the various physical properties of the materials used for ophthalmic lenses.

B.3 List the advantages and disadvantages of the various glasses and plastics.

This section provides grounding knowledge for core competencies covered later in the syllabus.

C. Lens form

The expected learning outcome is that the student understands the changes in vergence associated with a thin ophthalmic lens and comprehends the various forms in which such a lens may be manufactured.

Students will be expected to:

C.1 Define a spherical lens.

C.2 Indicate on a diagram, with radii of curvature marked, converging and diverging forms of a spherical lens.

This section provides grounding knowledge for core competencies covered later in the syllabus.

Related GOC core competency

C.3 Use thin lens theory to derive the expression for the power of a thin lens: $F = (n'-n)\ (1/r_1 - 1/r_2)$

C.4 Use the relationship in C3 or individual surface power formulae to calculate:
equi-convex, plano-convex, meniscus, equi-concave and plano-concave lens forms.

C.5 Know what is meant by the term base curve as applied to the form of an ophthalmic lens.

C.6 Know what is meant by the terms flat and curved as applied to the form of an ophthalmic lens.

C.7 Recall the formula for surface power and use it to calculate the required marked surface power of a tool to produce a specified surface power made from a medium other than that for which the tools are calibrated.

D. Parameters of sphero-cylindrical lenses

This section provides grounding knowledge for core competencies covered later in the syllabus.

The expected learning outcome is that the student will appreciate what is meant by a flat astigmatic lens and with the aid of diagrams be able to:

Students will be expected to:

D.1 Define a cylindrical surface.

D.2 Define the terms principal meridians and power meridians.

D.3 State what is meant by standard axis notation.

D.4 Write a lens power in crossed cylinder form, or sph-cyl form, the latter being in either plus or minus cyl form.

D.5 Transpose from one form of prescription to another.

D.6 Solve numerical calculations involving several flat thin astigmatic lenses with compatible axes in contact.

E. Parameters of toric lenses

This section provides grounding knowledge for core competencies covered later in the syllabus.

The expected learning outcome is that the student will be able to distinguish between the different forms of toric lenses and appreciate their function.

Students will be expected to:

E.1 Define the term toroidal surface.

E.2 Describe the terms tyre, barrel and capstan, as applied to a toroidal surface.

E.3 Define the terms base curve and cross curve, as applied to a toroidal surface.

E.4 Specify a toroidal surface in terms of its base curve and cross curve.

E.5 Define the term toric lens.

E.6 Explain what is meant by a plus base toric lens and a minus base toric lens.

E.7 Specify a toric lens in terms of a base curve, a cross curve and a sphere curve.

E.8 Transpose from one type of toric lens:

I. onto a given base curve (plus or minus)
II. onto a given sphere curve (plus or minus)

E.9 Transpose from a given toric form into cross cylinder or sphere/cyl form.

Related GOC core competency

F. Line foci and disc of least confusion

The expected learning outcome is that the student recognises the formation of images produced by an astigmatic lens and will be able to:

F.1 Draw a diagram showing the nature of the pencil refracted by a cylindrical lens.

F.2 Draw a diagram showing the nature of the pencil produced by a sph-cyl lens.

F.3 Apply the vergence formulae used to locate the positions of the line foci, the length and direction of the line foci, and the position and diameter of the disc of least confusion.

F.4 Use the formula from F3 to solve numerical calculations on astigmatic pencil problems.

F.5 Use thin lens theory to calculate the prescription of a thin lens, placed in contact with a given astigmatic lens, to give a specified type of image in a specified plane.

This section provides grounding knowledge for core competencies covered later in the syllabus.

Theory of Ophthalmic Lenses

Unit 1b - continued

G. Lens measure and lens thickness

Related GOC core competency

The expected learning outcome is that the student appreciates the use of the lens measure and is able to relate edge and centre thickness with a given lens prescription, and will be expected to be able to:

G.1 Explain the structure and associated theory of the lens measure.

G.2 Explain how to use the lens measure.

G.3 Calculate a surface power for materials other than that for which the measure is calibrated.

G.4 State both the accurate and approximate sag formulae.

G.5 Calculate edge thickness and thickness at the geometrical centre or optical centre for:

I. Spherical lenses
II. Astigmatic lenses
III. The above lenses combined with prism or decentration

H. Ophthalmic prisms and prismatic effects

This section provides grounding knowledge for core competencies covered later in the syllabus.

The expected learning outcome is that the student will, for ophthalmic prisms and prismatic effects, be able to:

H.1 Define the terms:
I. Refracting edge
II. Principal section
III. Apical angle

H.2 Derive the relationship for a small angled prism: $d = (n-1)a$

H.3 Define the prism dioptre.

H.4 Use the relationships of H2 and H3 to solve numerical examples on deviation (in degrees or prism dioptres) produced by a small angled prism.

H.5 Use the 360 degree notation to specify the base setting of a prism.

H.6 Describe how to construct a tangent scale capable of measuring the:

I. Power of a prism in prism dioptres
II. Deviation produced (in degrees)
III. Apical angle (in degrees)

Related GOC core competency

H.7 Describe how to locate and mark a line joining apex to base of a plano prism.

H.8 State the prism thickness difference formula

$$g = \frac{Pd}{100(n-1)}$$

H.9 Use the equation from H8 to solve numerical examples.

H.10 Compound any number of prisms into a single resultant.

H.11 Resolve a single prism into two components using either a graphical method or calculation.

H.12 Split prism power between the two eyes.

H.13 Solve numerical examples based on H10 – H12.

H.14 Describe the action of the rotary prism (Risley Prism).

H.15 Derive the expression known as Prentice's Rule - P=cF

H.16 Use Prentice's Rule to calculate the magnitude and direction of the prismatic effect at any point on a lens. Either the decentration or the distance of the point from the optical centre of the lens may be given. The lenses specified may be positive or negative spheres, plano-cyls or sph-cyl (but with the cylinder axis restricted to 90 and 180). The prismatic effect may be required as a single resultant value or as vertical and horizontal components.

H.17 Use Prentice's Rule to calculate the magnitude and direction of decentration required to produce a specified amount of prism for a given prescription for the types of lenses listed in H16. The decentration may be required as a single resultant value or as vertical and horizontal components.

H.18 Calculate the minimum size uncut required using the stated horizontal lens size and the single decentration as calculated in H17, limited to round and/or oval lenses.

H.19 Explain what is meant by differential (relative) prism.

H.20 Find the differential prism for a pair of lenses (for astigmatic lenses, axes will be restricted to 90 and 180).

Theory of Ophthalmic Lenses

Unit 1b - continued

I. Elements of ametropia

The expected learning outcome is that the student will understand the terms used to describe the elements of ametropia and be able to:

I.1 Define ametropia, emmetropia, myopia and hypermetropia.

I.2 Define and represent on a diagram the far point of a reduced eye.

I.3 Draw diagrams, showing the positions of the far point and the spectacle lens second focal point, which demonstrate how spherical ametropia is corrected.

I.4 Define vertex distance and spectacle distance and their significance for high lens powers.

I.5 Calculate effective powers with spectacle lenses at different vertex distances.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

ASSESSMENT FORMAT			
Unit	1b		
Title	Theory of Ophthalmic Lenses		
Format	A combined theory examination (with Unit 1a Theory of General Optics) of six written questions to be attempted from a choice of eight		
Time allowed	3 hours	**Theoretical pass mark**	40%
Year	1		

Section A: Single vision lenses

A1. Lens measure

The expected learning outcome is that the candidate should be able to:

A1.1 Test a lens measure for zero error.

A1.2 Locate, measure and record the base curve, cross curve and sphere curve on a toric lens.

Related GOC core competency

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

A2. Single vision focimetry

The expected learning outcome is that the candidate should, for spherical and astigmatic lenses as appropriate, be able to:

A2.1 Locate and mark the optical centre of a lens.

A2.2 Measure and record the components of a spherical and astigmatic lens.

NB: *The learning outcomes in A2 must be achieved using a telescope type manual focimeter.*

4.1.3 *Measures and verifies optical appliances taking into account relevant standards where applicable.*

A3. Hand neutralisation

The expected learning outcome is that the candidate should, for spherical and astigmatic lenses as appropriate, be able to:

A3.1 Recognise transverse movement.

A3.2 Recognise scissors movement.

A3.3 Locate and mark the principal meridians of a lens.

A3.4 Locate and mark the optical centre of a lens.

A3.5 Neutralise by hand and record the power of a spherical lens.

A3.6 Neutralise by hand and record the prescription of an astigmatic lens.

4.1.3 *Measures and verifies optical appliances taking into account relevant standards where applicable.*

Section B: Frame measurements and frame materials

B1. Frame measurements

The expected learning outcome is that the student should be able to locate, measure and record for fixed pad bridge frames, regular bridge frames and frames with pads on arms as appropriate:

B1.2 Box lens size.

B1.3 Distance between lenses.

B1.4 Distance between rims.

B1.5 Bridge Width.

B1.6 Bridge Height.

B1.7 Crest Height.

B1.8 Apical Radius.

B1.9 Projection.

B1.10 Distance between pad centres.

B1.11 Splay angle of pad.

B1.12 Frontal angle of pad.

B1.13 Angle of side.

B1.14 Length to bend.

B1.15 Length of drop.

B1.16 Downward angle of drop.

B1.17 Total length of side.

B1.18 Frame head width.

B1.19 Frame temple width.

B1.20 Let-back of side.

Related GOC core competency

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

B2. Frame construction and materials

The expected learning outcome is that the candidate should be able to:

B2.1 Identify current and obsolete frame materials and describe their properties.

B2.2 Recall terms used in the construction of spectacle frames.

B2.3 Describe the construction of spectacle frames and mounts designed for adults and children.

B2.4 Describe the raw materials used in spectacle frame manufacture.

4.3.1 *Identifies current and obsolete frame materials and considers and applies their properties when handling, adjusting, repairing and dispensing.*

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

Section C: Spectacle fitting and facial measurements

C1. Frame adjustments and tools

The expected learning outcome is that the candidate should be able to demonstrate:

C.1 Determine the need for adjustments and the order in which they should be carried out.

C.2 Demonstrate the handling and adjustment of all types of spectacle frames and materials.

C.3 Identify tools used in the repair, adaption and adjustment of spectacle frames.

C.4 Explain any safety issues surrounding the use of tools.

C.5 Demonstrate the use of tools.

Related GOC core competency

4.3.1 *Identifies current and obsolete frame materials and considers and applies their properties when handling, adjusting, repairing and dispensing.*

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

C2. Frame materials

C.2.1 Measure the interpupillary distance.

C.2.2 Measure monocular interpupillary distances.

C.2.3 Measure crest height.

C.2.4 Measure bridge projection.

C.2.5 Measure apical radius.

C.2.6 Measure distance between rims @10mm and 15mm below crest height.

C.2.7 Measure frontal angle.

C.2.8 Measure splay angle.

C.2.9 Measure front to bend.

C.2.10 Measure head width and temple width.

4.5.1 *Accurately records facial measurements and dispenses the most appropriate appliance taking into account development, comfort, function and safety.*

Unit 2 continues over the page

Ophthalmic Dispensing Practice

Unit 2 - continued

Section D: Single vision prescription analysis and lens description

The expected learning outcome is that the candidate should, at preliminary level, be able to:

D.1 Analyse and interpret verbal, non-verbal and written information.

D.2 Demonstrate effective questioning and listening skills.

D.3 Identify incomplete, inaccurate and ambiguous prescriptions.

D.4 Recall spectacle lens data and availability.

D.5 Suggest suitable lens types for a given prescription.

D.6 Explain the relationship between prescriptions for different distances.

D.7 Explain the use of terms relating to spherical and astigmatic ametropia.

D.8 Explain how and why prismatic correction may be included in a prescription.

D.9 Describe mechanical and optical properties of spectacle lenses.

D.10 Describe tints, coatings and lens treatments.

D.11 Identify where personal eye protection may be required.

D.12 Discuss lenses suitable for personal eye protection.

D.13 Provide a description of given spectacle lenses.

Related GOC core competency

4.1.1 *Identifies anomalies in a prescription and implements the appropriate course of action.*

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patient's needs and requirements.*

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

ASSESSMENT FORMAT			
Unit	2		
Title	Ophthalmic Dispensing Practice		
Format	Preliminary Qualifying Examination (PQE) a combination of practical and viva examinations		
Time allowed	3½ hours	**Practical pass mark**	50% Per Section
Year	1		

A. Fields of view

The expected learning outcome is that the student should understand the limitations imposed on an ametrope's field of vision and be able to:

A.1 Explain the field of vision of the eye and the field of fixation.

A.2 Describe factors affecting the field of view of spectacle lenses.

A.3 Describe and calculate the extent of the apparent field of view and real field of view.

A.4 Describe the jack-in-the-box effect.

A.5 Determine the ocular rotation of the eye when viewing distant and near objects through thin correcting lenses.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

B. The use of tinted, coated and protective lenses

The expected learning outcome is that the student should recognise where general safety and protection from harmful radiations are important in patient welfare and be able to:

B.1 Describe sources of radiation and the effect upon the various components of the eye.

B.2 Recall wavelength transmittance of the ocular media.

B.3 Explain spectral transmittance and luminous transmittance.

B.4 Explain how transmission curves are constructed for a range of glass, plastics and filters.

B.5 Advise on the use of types of tints and coatings for specific applications.

B.6 Describe methods of producing tinted lenses.

B.7 Describe photochromic filters.

B.8 Describe the formation of reflections and ghost images from spectacle lenses.

B.9 Describe the principles of impact resistant lenses and their application.

B.10 Recall the general provisions of EN166-168 and test procedures.

B.11 Define plane polarised light and explain how it may be produced.

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patient's needs and requirements.*

4.2.1 *Advises on personal eye protection regulations and relevant standards, and appropriately advises patients on their occupational visual requirements.*

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

B.12 Explain the significance of the Brewster angle.

B.13 Describe the manufacture and use of polarising spectacles.

B.14 Describe the manufacture and application of hydrophobic and scratch resistance coatings.

B.15 Calculate surface reflectance.

B.16 Describe methods of reducing unwanted reflections.

B.17 Describe the difference between constructive and destructive interference.

B.18 Explain path length and amplitude conditions for producing destructive interference.

B.19 Describe how single and multi-layer anti reflection coatings can be applied to a spectacle lens.

Related GOC core competency

C. Multifocal lenses

The expected learning outcome is that the student should be able to dispense multifocal spectacle lenses safely and appropriately, and be able to:

C.1 Define terms used to locate and measure bifocals.

C.2 Recall the significance of distance and near visual points.

C.3 Describe the mechanical requirements of bifocals.

C.4 Explain jump and the criterion for no-jump bifocals.

C.5 Calculate jump in any bifocal lens.

C.6 Determine the position of the optical centre of the near portion and explain its significance.

C.7 Explain how differential prism at the NVP may be controlled.

C.8 Explain the use of split bifocals, cement bifocals, upcurve bifocals, bonded bifocals and blended bifocals.

C.9 Describe fused bifocals, their method of manufacture and use.

C.10 Describe solid bifocals, their method of manufacture and use.

C.11 Describe types of lenticular bifocals.

4.1.1 *Identifies anomalies in a prescription and implements the appropriate course of action.*

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patients' needs and requirements.*

4.1.3 *Measures and verifies optical appliances taking into account relevant standards where applicable.*

4.1.4 *Matches the form type and positioning of lenses to meet all the patient's needs and requirements and provides appropriate advice.*

C.12 Explain the need for multifocal and progressive power lenses.

C.13 Determine the intermediate addition for a given range of vision.

C.14 Describe occupational progressives, degressives and enhanced reading lenses and explain their advantages and disadvantages.

C.15 Describe types of trifocals available and explain their advantages and disadvantages.

C.16 Describe types of progressive power lenses and explain the advantages and disadvantages of the progression zone.

C.17 Describe the impact of changing the length of the progressive corridor in terms of the regions of indistinct vision.

C.18 Describe the impact of changing the addition power on the regions of indistinct vision.

C.19 Describe sketch and explain the permanent and temporary markings found on a typical progressive power lens.

Related GOC core competency

D. Special lenses

The expected learning outcome is that the student should be able to identify situations where special types of lenses may be required, and be able to:

D.1 describe and explain the principles of the following:

- lenses for use under water
- recumbent prisms
- Fresnel lenses
- Fresnel prisms
- Chavasse lenses
- Frosted lenses
- Lenses for occlusion
- Trigeminal spectacles
- Ptosis spectacles
- Adaptive lenses

4.2.2 *Recommends and dispenses special optical appliances where appropriate.*

7.1.7 *Understands likely management options related to the prescribing of the appliance.*

Unit 3 continues over the page

E. Task-specific dispensing

The expected learning outcome is that the student should understand the need to supply the correct optical appliance for a specific task, and be able to:

E.1 Analyse aspects of the visual task and associated working distances.

E.2 Describe the impact of the refractive error on the visual task requirement.

E.3 Describe the impact of Illuminance, luminance and glare on the visual task requirements.

E.4 Describe physical and environmental aspects of the workplace, which may contribute to factors affecting vision.

Related GOC core competency

4.2.1 *Advises on personal eye protection regulations and relevant standard, and appropriately advises patient's on their occupational visual requirements.*

7.1.5 *Understands the investigation and management of patients presenting with heterophoria, heterotropia and amblyopia based anomalies of binocular vision, including the relevance of history and the recognition of any clinical symptoms.*

7.1.7 *Understands likely management options related to prescribing of the appliance.*

F. Dispensing high powered lenses

The expected learning outcome is that the student should understand the optical, mechanical and cosmetic problems, which are likely to arise when dispensing high power spectacle lenses, and be able to:

F.1 Identify where reduced aperture lenses may be beneficial.

F.2 Describe types of lenticular and blended lenticular lenses.

F.3 Appreciate the effects of high power cylinders on lens thickness.

F.4 Recall the relationship between the aperture diameter and the thickness of a lenticular lens.

F.5 Calculate the edge thickness for a given concave lenticular aperture.

F.6 Explain the need for accurate centration.

F.7 Describe the effects of aspherising lens surfaces.

F.8 Explain the link between reduced thickness and increased refractive index.

F.9 Describe the aberrations, which may become apparent in high powers and how these may be reduced.

F.10 Explain the significance of frame fitting and vertex distance.

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patients' needs and requirements.*

4.1.3 *Measures and verifies optical appliances taking into account relevant standards where applicable.*

4.1.4 *Matches the form type and positioning of lenses to meet all the patient's needs and requirements and provides appropriate advice.*

F.11 Explain the effects of pantoscopic angle and face form angle on the prescription.

F.12 Appreciate the link between the trial lens prescription, the prescription ordered and the final compensated powers due to the as worn position.

Related GOC core competency

G. Facial anatomy and frame fitting

The expected learning outcome is that the student should understand the link between anatomical structures and spectacle frame fitting, and be able to:

G.1 Describe the structure of skin in the nasal and aural areas and its relevance to spectacle fitting.

G.2 Describe the facial sensory nerve supply and its relevance to spectacle fitting.

G.3 Recall types of skin allergy and other conditions, which relate to spectacle fitting.

G.4 Appreciate what can happen to the skin due to ill-fitting spectacles.

G.5 Understand the effect and relevance of facial anatomy on spectacle dispensing for adults.

G.6 Appreciate how to take and record the relevant information for adults.

G.7 Describe facial prostheses as they relate to spectacle fitting.

G.8 Recall the British Standards definitions of frame and facial measurements and understand the implications on the final frame fitting.

1.1.1 *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.*

4.5.1 *Accurately records facial measurements and dispenses the most appropriate appliance taking into account development, comfort, function and safety.*

ASSESSMENT FORMAT			
Unit	3		
Title	Theory of Ophthalmic Dispensing		
Format	A combined theory examination (combined with Unit 4 Advanced Theory of Ophthalmic Lenses) of six written questions to be attempted from a choice of eight		
Time allowed	3 hours	**Theoretical pass mark**	40%
Year	2		

Advanced Theory of Ophthalmic Lenses

Unit 4

A. Prismatic effect

The expected learning outcome is that the student should understand the significance of prismatic effects at any point on a lens, compare prismatic effects in two eyes, and should able to:

A.1 Find either graphically or by calculation the magnitude and direction of the prismatic effect at any point on a lens. Either the decentration or the distance of the point from the optical centre of the lens may be given. The prismatic effect may be required as a single resultant value or as vertical and horizontal components.

A.2 Find either graphically or by calculation the magnitude and direction of decentration required to produce a specified amount of prism for a given prescription. The decentration may be required as a single resultant value or as vertical and horizontal components.

A.3 Calculate the amount of prism to be slabbed-off and discuss the thickness difference in bi-centric lenses.

A.4 Determine the prismatic effect at the near visual point on a bifocal lens.

A.5 Calculate and explain the significance of differential prism in bifocal lenses.

Related GOC core competency

This section provides grounding knowledge for core competencies covered later in the syllabus.

B. Cylindrical lenses

The expected learning outcome is that the student should recognise the significance of cylindrical powers on lens thickness, and the need to combine cylindrical powers, and be able to:

B.1 Calculate notional cylindrical powers.

B.2 Calculate the thickness of an astigmatic lens along oblique meridians.

B.3 Sum obliquely combined cylinders either by formulae or by graphical means.

This section provides grounding knowledge for core competencies covered later in the syllabus.

C. Effectivity, vertex powers and accurate transposition

The expected learning outcome is that the student should understand effective powers and vergences, be able to solve problems relating to thick spectacle lenses, and be able to:

C.1 Calculate the effective power of a lens.

This section provides grounding knowledge for core competencies covered later in the syllabus.

Related GOC core competency

C.2 Calculate prescription modifications to account for differing vertex distances.

C.3 Recall the use of back vertex powers to number spectacle lenses.

C.4 Transpose lens forms taking thickness into account.

C.5 Explain front and back surface compensation.

C.6 Calculate vertex power allowances.

C.7 Explain near vision effectivity error.

C.8 Describe ophthalmic trial lens types and the suitability of trial lenses for refraction and neutralisation.

C.9 Explain how vertex powers and the vergence impressed by spectacle lenses in near vision in multifocal lenses can be measured using a focimeter.

C.10 Calculate target movement and the power of the standard focimeter lens.

C.11 Calculate spectacle magnification using the shape factor and power factor.

C.12 Calculate the form and thickness of afocal iseikonic lenses.

D. Aberrations and spectacle lens design

This section provides grounding knowledge for core competencies covered later in the syllabus.

The expected learning outcome is that the student should understand that the quality of images is variable and dependent on design factors, and be able to:

D.1 Define the difference between paraxial and finite ray tracing.

D.2 Expand the sine function and recall what is meant by first order approximation.

D.3 Describe spherical aberration and its influence on the paraxial theory of ophthalmic lenses.

D.4 Describe and calculate transverse chromatic aberration for single vision lenses.

D.5 Describe tangential and sagittal planes of refraction, the astigmatic pencil, teacup and saucer diagrams, image shell diagrams and the variation in oblique astigmatism with stop position and form of lens.

Advanced Theory of Ophthalmic Lenses

Unit 4 - continued

Related GOC core competency

D.6 Describe curvature of field and the Petzval surface, and calculate the radius of curvature of the Petzval surface.

D.7 Describe pincushion and barrel distortion and the significance of distortion adaptation to new spectacles.

D.8 Explain the criterion for a best form spectacle lens.

D.9 Describe image shell diagrams for plus and minus point-focal lenses, Percival lenses and lenses which exhibit minimum tangential error.

D.10 Explain the significance of oblique vertex sphere powers and image vergences.

D.11 Explain oblique astigmatic error, mean oblique power and mean oblique error.

D.12 Describe conicoidal surfaces (ellipsoids, paraboloids and hyperboloids).

D.13 Describe the surface astigmatism of a conicoid and how this can be used to combat aberrational astigmatism.

D.14 Calculate the thickness of a lens with a conicoidal surface.

D.15 Describe polynomial surfaces and blended zonal aspheric surfaces.

D.16 Discuss the significance of wavefront aberrations and transfer function.

D.17 Describe freeform technology and the digital surfacing application to lens design.

D.18 Demonstrate awareness of the technology and function of adaptive lenses.

ASSESSMENT FORMAT			
Unit	4		
Title	Advanced Theory in Ophthalmic Lenses		
Format	A combined theory examination (combined with Unit 3 Theory of Ophthalmic Dispensing) of six written questions to be attempted from a choice of eight		
Time allowed	3 hours	**Theoretical pass mark**	40%
Year	2		

A. Ocular conditions and systemic disorders

Related GOC core competency

The expected learning outcome is that the student should, for a range of common ocular diseases and disorders:

A.1	Explain how to keep clear, accurate and contemporaneous patient records, which record all relevant findings and decisions made. Recall the Association's guidance regarding record keeping. Recall and interpret the Data Protection Act and understand the role of the Information Commissioner's office. Interpret and respond appropriately to patient records and other relevant information.	***2.1.2*** *Maintains confidentiality in all aspects of patient care.* ***2.2.4*** *Creates and keeps full, clear, accurate and contemporaneous records.* ***2.2.5*** *Interprets and responds to existing records.*
A.2	Recognise the signs and symptoms of patients presenting with common abnormal ocular conditions.	***8.1.3*** *Understands the clinical treatment of a range of significant ocular diseases/disorders and conditions.* ***8.1.4*** *understands the clinical treatment of a range of systemic diseases with ocular manifestations and adverse ocular reactions to medications* ***8.1.5*** *Understands the implications of the manifestations of eye disease.*
A.3	Explain the expected management of a patient presenting with a red eye, painful eye, sudden loss of vision, gradual loss of vision or double vision.	
A.4	Understand clinical treatments available.	
A.5	Be aware of surgical procedures.	
A.6	Explain the importance and significance of family history, signs and symptoms.	***1.1.2*** *Elicits the detail and relevance of any significant symptoms.*
A.7	Explain the importance of the patient's health status, medication, work, sports, lifestyle and special skills to ophthalmic dispensing.	***1.1.1*** *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.* ***1.2.4*** *Explains to the patient the implications of their pathological or physiological eye conditions.*
A.8	Be aware that certain systemic disorders and medication could have effects on the visual system.	***8.1.4*** *Understands the clinical treatment of a range of systemic diseases with ocular manifestations and adverse ocular reactions to medication.*

Abnormal Ocular Conditions and Standards of Practice

Unit 5 - continued

B. Pharmacology

The expected learning outcome is that the student should be able to describe ophthalmic drugs under the following headings:

B.1 Types of ophthalmic drugs and topical preparations.

B.2 Be aware that vitamin and mineral supplements may be beneficial.

B.3 Modes of action.

B.4 Dosage.

B.5 Functions and effects.

B.6 Regulations affecting the use, storage and disposal of ophthalmic drugs used in ophthalmic practice.

Related GOC core competency

2.1.1 *Adheres to health and safety policies in the practice including the ability to implement appropriate measures for infection control.*

7.1.2 *Understands the use of ocular diagnostic drugs to aid refraction.*

7.1.3 *Understands the methods of refracting children, cycloplegic drugs and their effects, and understands prescribing and management decisions.*

C. Acts and bodies

The expected learning outcome is that the student must have an understanding and working knowledge of the relevant legislation and civil laws, as well as codes of conduct and professional guidance to be able to care for, respect and protect the rights, dignity, privacy and confidentiality of patients. Students will be expected to:

C.1 Understand the role of professional, regulatory and corporate bodies that operate in the UK, including committees on a local level.

C.2 Demonstrate an awareness of the contents of the Opticians Act and the following Statutory Instruments:

- Fitness to practice rules.
- Rules relating to injury or disease of the eye.
- Sight testing (examination and prescription) no. 2 regulations.
- Sale of optical appliances order of Council.
- Continuing education and training rules.

C.3 Recall the ABDO Advice and Guidelines, the General Optical Councils (GOC) Standards of Practice and other codes and guidance set by the profession.

C.4 Recall sections of the Medicines Act that are relevant to dispensing opticians.

2.1.1 *Adheres to health and safety policies in the practice including the ability to implement appropriate measures for infection control.*

2.1.2 *Maintains confidentiality in all aspects of patient care.*

2.2.3 *Is able to work within the law and within the codes and guidelines set by the regulator and the profession.*

C.5 Understand and explain the terms duty of care and negligence.

C.6 Explain the importance of legal and ethical responsibilities in relation to the publication, advertising and broadcasting information of services, facilities and goods. Recall and interpret relevant aspects of the Sale of Goods Act, the Trades Description Act and Contract Law.

C.7 Recall and interpret relevant aspects of the Equalities Act.

C.8 Explain the significance of Health and Safety legislation in the workplace, and how it applies to practice owners, employees and for patients. Recall the Association's advice regarding infection control and waste disposal. Recall and explain the regulatory implications of the Environment Agency.

C.9 Recall current legislation regarding professional and practice indemnity insurance.

Related GOC core competency

D. General Ophthalmic Services (GOS)

The expected learning outcome is that the candidate should be able to: Learning outcome.

D.1 Understand and demonstrate a working knowledge of health care delivery systems. Recall the regulations and describe the formal documentation relating to the provision of General Ophthalmic Services in the UK.

D.2 Describe, for practices that hold a contract to provide General Ophthalmic Services, the various policies that such a practice is required to have on display or on file including:

- Clinical governance
- Freedom of Information Act
- Chaperone policy
- Data management
- Whistle blowing
- Critical incident reporting
- Safeguarding children
- Complaints
- Gifts reporting

2.2.1 *Is able to manage all patients including those who have additional clinical or social needs.*

2.2.2 *Is able to work within a multi-disciplinary team.*

2.2.4 *Creates and keeps full, clear, accurate and contemporaneous records.*

E. Business management

The expected learning outcome is that the candidate should be able to:

E.1 Demonstrate how to work within a multidisciplinary team. Understand and appreciate the varying roles such as reception staff, students, clinical and optical assistants, optometrists, dispensing opticians, contact lens opticians, low vision opticians, colleagues with higher qualifications (glaucoma, independent prescribing etc.) general practitioners and ophthalmologists.

2.2.2 *Is able to work within a multi-disciplinary team.*

Abnormal Ocular Conditions and Standards of Practice

Unit 5 - continued

E.2 Describe the various UK business models that exist in optometry and ophthalmic dispensing.

E.3 Devise clear, accurate and contemporaneous records of financial transactions relating to fees and vouchers and other financial information.

E.4 Understand the various and accepted methods of calculating VAT on the sale of spectacles and contact lenses.

E.5 Describe basic business management and financial accounting techniques. Provide information about payment of fees and other costs relevant to patient's needs and wants.

E.6 Demonstrate a knowledge and understanding of professional guidance in relation to conflicts of interest.

E.7 State the implications of current UK and European legislation relevant to the operation of an optical practice and the dispensing of optical appliances. Recall and explain the regulatory implications of the Medical and Healthcare products Regulatory Agency.

Related GOC core competency

2.1.3 *Shows respect for all patients.*

2.2.3 *Is able to work within the law and within codes and guidelines set by the regulator and the profession.*

2.2.4 *Creates and keeps full, clear, accurate and contemporaneous records.*

ASSESSMENT FORMAT			
Unit	5		
Title	Abnormal Ocular Conditions and Standards of Practice		
Format	A combination of theory examination, practice visit assessment and Unit 12 practical Final Qualifying Examination		
Time allowed	N/A	**Theoretical pass mark**	40%
Year	2 / 3	**Practical pass mark**	60% per section

Ocular Anatomy

Unit 6

A. Anatomical terminology

The expected learning outcome is that the student should be able to recall:

A.1 Anatomical planes and terms.

A.2 The terms used to identify anatomical planes.

A.3 The terms used to locate a structure's position relative to another structure.

Related GOC core competency

This section provides grounding knowledge for the core competencies covered later in the syllabus.

B. Systems

The expected learning outcome is that the student should be aware of how systems relate to anatomical structures, and be able to describe:

B.1 The structure, functions and location of epithelial tissue, connective tissue, muscle tissue and nervous tissue.

B.2 The structure and functions of blood vessels.

B.3 The terms somatic, autonomic, motor, sensory, central and peripheral, as they apply to the nervous system.

This section provides grounding knowledge for the core competencies covered later in the syllabus.

C. The eye and ocular adnexa

The expected learning outcome is that the student should be able to: describe the location, function, gross structure and dimensions, layers, nerve supply, sources of nutrition, waste product removal, and be able to annotate, as appropriate, a section through:

C.1 The cornea, and to explain factors affecting transparency.

C.2 The sclera, and to recall factors affecting its appearance.

C.3 The limbal region, trabecular meshwork and canal of Schlemm.

C.4 The iris.

C.5 The ciliary body and to describe its involvement in accommodation.

C.6 The choroid.

C.7 The retina.

C.8 The optic nerve.

This section provides grounding knowledge for the core competencies covered later in the syllabus.

Ocular Anatomy

Unit 6 - continued

C.9 The crystalline lens,

C.10 The conjunctiva.

C.11 The eyelids.

C.12 The lacrimal system.

C.13 The skull and orbit.

C.14 The extrinsic oculorotatory muscles.

C.15 The aqueous and vitreous humours.

C.16 The visual pathway.

Related GOC core competency

ASSESSMENT FORMAT			
Unit	6		
Title	Ocular Anatomy		
Format	A written examination consisting of MCQ and short answer questions		
Time allowed	1 hour	**Theoretical pass mark**	40%
Year	2		

A. Practice environment

Related GOC core competency

The expected learning outcome is that the student should be able to:

A.1 Understand the factors affecting the patient pathway,

A.2 Considers patient height within the practice environment.

A.3 Use appropriate material to provide a child friendly environment.

A.4 Use appropriate supporting material to aid understanding.

9.1.1 *Directs communication to the child in appropriate language and manner.*

9.1.2 *Discusses with the carer as appropriate the factors influencing the dispensing.*

B. Paediatric prescribing

The expected learning outcome is that the student should be able to:

B.1 Understand the different distance and near test methods designed for children.

B.2 Describe the function and effect of cycloplegic drugs.

B.3 Appreciate the critical period, paediatric prescribing decisions and their purpose e.g. early onset myopia.

B.4 Understand how the child may be managed e.g. occlusion, prescribed prism.

7.1.2 *Understands the use of ocular diagnostic drugs to aid refraction.*

7.1.3 *Understands the methods of refracting children, cycloplegic drugs and their effects, and understands prescribing and management issues.*

9.2.1 *Understands the methods of refracting children and prescribing decisions.*

C. Developmental anatomy

The expected learning outcome is that the student will be able to:

C.1 Take accurate facial measurements and appreciate how these relate to the final fitting appliance.

C.2 Appreciate the implications of anatomical features and their development over time, in relation to the fitting of the appliances.

9.3.1 *Takes accurate facial measurements.*

9.3.2 *Understands changes in measurements as the facial features develop.*

D. Frame design

The expected learning outcome is that the student should be able to:

D.1 Understand the importance of frame function in relation to comfort, fit, position, safety, prescription and developmental aspects of the patient:

- Frame material
- Eye shape
- Side type
- Eye size
- Bridge fit
- Additional features

9.3.2 *Understands changes in measurements as the facial features develop.*

9.3.3 *Advises on appropriate frames and availability of special features.*

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.*

Related GOC core competency

D.2 Consider and explain comfort and suitability of frame choice above cosmesis.

D.3 Consider pantoscopic angle in relation to bridge development of the patient.

D.4 Appreciate how to modify a standard frame to ensure a comfortable fit such as:

- Shorten sides
- Alter nose pad size/material
- Attach curl sides
- Use of strap bridges

D.5 Explain the importance of maintaining an accurate fit

E. Lenses

The expected learning outcome is that the student will be able to:

9.4.1 *Advises on lens choice with emphasis on safety, comfort & cosmesis.*

9.4.2 *Measures for lens positioning.*

E.1 Provide appropriate advice for lens choice such as taking into consideration patient age, hobbies and prescription such as:

- Material
- Safety
- Lens coatings
- Glazing options
- Index
- Lens form
- Specialist tints
- Surfaced lenses

F. Paediatric special optical appliances

The expected learning outcome is that the student will be able to:

9.3.3 *Advises on appropriate frames and availability of special features.*

9.4.1 *Advises on lens choice with emphasis on safety, comfort & cosmesis.*

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.*

F.1 Understand the need for UV protection at a young age and the impact of UV of the underdeveloped eye.

F.2 Recognise a requirement for sports appliances such as:

- Prescription swimming goggles
- Recreational sports spectacles

F.3 Understand when contact lenses may be a suitable option to discuss with the patient and carer.

F.4 Understand conditions that may require specialist forms of protection such as albinism.

G. Further anatomical considerations

The expected learning outcome is that the student will be able to:

G.1 Appreciate the facial features of babies under the age of 12 months and the provision of suitable optical appliances.

G.2 Consider the difference in facial characteristics of children and the factors influencing the selection of appropriate optical appliances. Such as:

- Children from different ethnicities
- Children with Down's syndrome
- Children with other anatomical conditions

Related GOC core competency

9.3.1 *Takes accurate facial measurements.*

9.3.2 *Understands the changes in measurements as facial features develop.*

9.3.3 *Advises on appropriate frames and availability of special features.*

9.4.2 *Measures for lens positioning.*

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.*

ASSESSMENT FORMAT			
Unit	7		
Title	Paediatric Dispensing		
Format	A combination of work based practice visit assessment and FQE practical examination		
Time allowed	N/A	**Practical pass mark**	60% per section
Year	2 / 3		

Communication in Ophthalmic Dispensing

Unit 8

A. Communication in ophthalmic dispensing

The expected learning outcome is that the students should be able to demonstrate the ability to seek and communicate relevant information from and to patients in an effective and appropriate manner. Students will be expected to:

		Related GOC core competency
A.1	Demonstrate communication effectively with the patient using verbal, non-verbal and written skills.	***1.1.3*** *Identifies and responds appropriately to patients' fears and anxieties and concerns about their visual welfare.*
A.2	Explain how to take into consideration the patients' physical, emotional, intellectual and cultural background.	***1.1.1*** *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.*
A.3	Take accurate history from patients with a range of ophthalmic problems and needs.	***1.1.1*** *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.* ***1.1.2*** *Elicits the detail and relevance of any significant symptoms.* ***2.1.3*** *Shows respect for all patients.*
A.4	Demonstrate how to deal effectively with patient concerns and complaints.	***1.1.3*** *Identifies and responds appropriately to patients' fears and anxieties and concerns about their visual welfare.*
A.5	Explain the importance and significance of family history, signs and symptoms.	***1.1.2*** *Elicits the detail and relevance of any significant symptoms.*
A.6	Explain the importance of patient's health, status, medication, work, sports, lifestyle and special skills to ophthalmic dispensing.	***1.1.1*** *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.* ***1.2.4*** *Explains to the patient the implications of their pathological or physiological eye conditions.*

		Related GOC core competency
A.7	Demonstrate appropriate communication skills when discussing ophthalmic matters with patients, taking into account relevant individual characteristics.	***1.1.1*** *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.* ***1.1.2*** *Elicits the detail and relevance of any significant symptoms.*
A.8	Explain how to deal with patients' fears, anxieties and concerns about their visual welfare in the eye examination and its outcome.	***1.2.4*** *Explains to the patient the implications of their pathological or physiological eye conditions.*
A.9	Discuss how to deal with a patient who needs information about systemic disease and its ocular impact, its treatment and the possible ocular side effects of medication.	***1.2.3*** *Discusses with the patient the importance of systemic disease and its ocular impact, its treatment and the possible ocular side effects of medication.*
A.10	Describe how to recognise the patient's expectations and aspirations and managing situations where these cannot be met.	***1.2.1*** *Understands the patients expectations and aspirations and manages situations where these cannot be met.*
A.11	Describe how to communicate with patients who have poor or non-verbal communication skills or those who are confused, reticent or who might mislead.	***1.2.2*** *Communicates with patients who have poor or non-verbal communication skills, or those who are confused, reticent or might mislead.*

ASSESSMENT FORMAT			
Unit	8		
Title	Communication		
Format	A combination of work based practice visit assessment and FQE practical examination		
Time allowed	N/A	**Practical pass mark**	60% per section
Year	2 / 3		

The Assessment and Management of Refractive Errors

Unit 9

A. Optics of the eye, ametropia, and its correction

The expected learning outcome is that the student should be able to:

A.1 Describe Gullstrand's simplified schematic eye and its equivalent surface.

A.2 Describe Emsley's standard and non-standard reduced emmetropic eyes.

A.3 Explain emmetropia and ametropia in real eyes, the simplified schematic eye and the reduced eye.

A.4 Classify spherical ametropia.

A.5 Describe the growth of the human eye in emmetropia, spherical ametropia and progressive myopia.

A.6 Describe the correction of spherical ametropia in the reduced eye with a thin lens.

A.7 Define ocular refraction, spectacle refraction and vertex distance and use equations relating to them.

A.8 Describe, and use equations relating to, the formation of clear and blurred retinal images in unaccommodated and accommodated reduced eye.

A.9 Describe, and use equations relating to, the formation of clear and blurred retinal images in the unaccommodated and accommodated reduced eye, corrected by a thin or thick lens.

A.10 Explain spectacle magnification relating to the reduced eye.

A.11 Calculate the size of retinal images in corrected and uncorrected eyes formed by a near object.

A.12 Describe, and use equations relating to, spectacle and ocular accommodation with the reduced eye corrected by a thin or thick lens.

A.13 Compare the correction of spherical ametropia with contact lenses and spectacle lenses

A.14 Define relative spectacle magnification and describe the effect of axial length and corneal power induced ametropias on the retinal image size.

A.15 Describe the classification and correction of astigmatism in the reduced, and human eye.

Related GOC core competency

7.1.5 *Understands the investigation and management of patients presenting with heterophoria, heterotropia and amblyopia based anomalies of binocular vision, including the relevance of history and the recognition of any clinical symptoms.*

7.1.7 *Understands likely management options related to the prescribing of the appliance.*

9.2.1 *Understands the methods of refracting children and prescribing decisions.*

9.2.2 *Understands the investigation and management of children presenting with anomalies of binocular vision.*

A.16 Explain irregular refraction.

A.17 Be aware of refractive surgical procedures.

Related GOC core competency

B. Accommodation

The expected learning outcome is that the student should be able to:

B.1 Recall theories of accommodation and how the lens changes during accommodation.

B.2 Describe the stimulus to accommodation.

B.3 Explain the anomalous myopias.

B.4 Describe and explain methods of assessing amplitude range and near point of accommodation.

B.5 Describe presbyopia, its causes and the near addition.

B.6 Explain the effect of depth of field on near vision.

B.7 Explain facultative, absolute, manifest and latent hypermetropia.

B.8 Explain the link between accommodation and early onset myopia.

B.9 Describe clinical aspects of aphakia and pseudophakia and their correction.

7.1.1 *Understands refraction of a range of patients by appropriate objective and subjective means.*

7.1.5 *Understands the investigation and management of patients presenting with heterophoria, heterotropia and amblyopia based anomalies of binocular vision, including the relevance of history and the recognition of any clinical symptoms.*

C. Ophthalmic instruments

The expected learning outcome is that the student should be able to describe and explain the use of:

C.1 The duochrome test.

C.2 The fan and block and associated subjective routine.

C.3 The cross cylinder and associated subjective routine.

C.4 Distance and near test types, including those specifically designed for paediatric use.

C.5 The retinoscope.

C.6 Subjective and objective optometers.

3.1.1 *Understands the methods of measurement of corneal curvature and assessment or regularity.*

3.1.2 *Understands the examination of the external eye and related structures by use of the slit lamp.*

3.1.3 *Understands the examination of the fundus using either a direct or indirect ophthalmoscope.*

3.1.4 *Understands the methods of assessment of colour vision.*

3.1.5 *Understands the instruments involved in visual field analysis and the results.*

The Assessment and Management of Refractive Errors

Unit 9 - continued

C.7 Direct and indirect ophthalmoscopes.

C.8 The slit lamp.

C.9 The keratometer and corneal topographers.

C.10 Contact and non-contact tonometers.

C.11 Instruments for analysing visual fields, and be able to explain the terms used to describe defective visual fields.

C.12 Colour vision tests, and to be able to classify and describe colour vision defects.

Related GOC core competency

3.1.6 *Understands the use of a tonometer and the results.*

7.1.1 *Understands the refraction of a range of patients by appropriate objective and subjective means.*

7.1.9 *Understands diagnostic methods for patients with field defects.*

D. Binocular vision

The expected learning outcome is that the student should understand the significance of co-ordinated eye movements, and be able to:

D.1 Explain primary, the diagnostic positions of gaze, the actions of individual muscles and the mechanism of oculorotation.

D.2 Explain terms used to describe eye movements.

D.3 Describe the relationship between accommodation and convergence.

D.4 Calculate convergence through centred and decentred spectacle lenses.

D.5 Describe fusional reserves.

D.6 Explain physiological diplopia.

D.7 Recall grades of binocular vision.

D.8 Define orthophoria.

D.9 Define and classify heterophoria and heterotropia.

D.10 Describe anomalies of accommodation and convergence.

D.11 Describe tests to investigate binocular vision status.

7.1.5 *Understands the investigation and management of patients presenting with heterophoria, heterotropia and amblyopia based anomalies of binocular vision, including the relevance of history and the recognition of any clinical symptoms.*

7.1.6 *Understands the objective and subjective tests necessary to investigate binocular vision status.*

7.1.7 *Understands likely management options related to the prescribing of the appliance.*

7.1.8 *Understands the investigation and management of patients presenting with incomitant deviations, including the recognition of symptoms and referral advice.*

E. Vision and vision perception

The expected learning outcome is that the student should be able to:

E.1 Explain the Duplicity Theory of Vision and dark adaption.

E.2 Explain the appearance and causes of entoptic phenomena.

E.3 Define visual acuity.

E.4 Describe methods of measuring and recording visual acuity.

E.5 Explain the effect of pupil size on visual acuity and depth of field.

E.6 Define and classify amblyopia.

E.7 Explain the theories of colour vision.

E.8 Explain monocular and binocular depth perception and steroacuity.

E.9 Describe methods of assessing steroacuity and be aware of factors that can affect it.

Related GOC core competency

3.1.4 *Understands the methods of assessment for colour vision.*

7.1.1 *Understands the refraction of a range of patients by appropriate objective and subjective means.*

7.1.4 *Understands refraction of patients with reduced visual acuity.*

7.1.5 *Understands the investigation and management of patients presenting with heterophoria, heterotropia and amblyopia based anomalies of binocular vision, including the relevance of history and the recognition of any clinical symptoms.*

7.1.6 *Understands the objective and subjective tests necessary to investigate binocular vision status.*

ASSESSMENT FORMAT			
Unit	9		
Title	The Assessment and Management of Refractive Errors		
Format	A written examination consisting of MCQ and theory questions		
Time allowed	2 hours	**Theoretical pass mark**	40%
Year	3		

Low Vision in Ophthalmic Dispensing

Unit 10

A. Low vision in practice

Related GOC core competency

The expected learning outcome is that the student should appreciate the visual needs, expectations and requirements of low vision patients, and be able to:

A.1 Define low vision, visual acuity and visual field.

A.2 Consider the criteria for sight impaired / severely sight impaired certification, the appropriate forms. Explain the difference between registration and certification and the benefits registration can offer the patient. Consider and verify the effectiveness of current refraction.

6.1.1 *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*

A.3 Compare types of test charts used for distance and near vision and discuss their uses, construction principles, advantages and disadvantages.

6.2.1 *Understands the assessment of visual function, including the use of specialist charts, the effects of illumination, contrast and glare.*

7.1.4 *Understands refraction of patients with reduced visual acuity.*

A.4 Understand the criteria for referral for a new prescription and understand limitation of knowledge.

6.1.1 *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*

A.5 Consider the use of contact lenses for patients with low vision

5.1.1 *Understands contact lens types and materials, their benefits and disadvantages, and their most appropriate applications.*

A.6 Understand the terms related to monocular and binocular contrast sensitivity.

A.7 Describe the factors affecting contrast sensitivity and the clinical tests used to assess it.

A.8 Understand the effects of contrast filters and other methods of improving contrast.

A.9 Consider the effects of illumination, glare and low contrast sensitivity on vision and visual acuity.

6.2.1 *Understands the assessment of visual function, including the use of specialist charts, the effects of illumination, contrast and glare.*

6.3.2 *Advises patients on illumination glare and contrast.*

		Related GOC core competency
A.10	Consider types of lamps and positioning of light sources and the relevance of discomfort and disability glare.	***6.2.1*** *Understands the assessment of visual function, including the use of specialist charts, the effects of illumination, contrast and glare.* ***6.3.2*** *Advises patients on illumination glare and contrast.*
A.11	Understand the reasons for reduced near vision acuity.	***6.1.1*** *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*
A.12	Understand the assessment of visual fields and visual pathway, including location of lesions giving rise to visual impairment.	***6.2.2*** *Understands the assessment of the visual field of patients with low vision.*
A.13	Be aware that systemic pathology may affect vision, visual acuity and visual fields.	***6.1.1*** *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*
A.14	Understand the indications for binocular and monocular appliances, including use of occlusion.	***4.4.1*** *Understands the conditions which cause visual impairment and to dispense the most appropriate low vision aid/advice.* ***6.2.3*** *Understands binocular vision in relation to low vision appliances.*
A.15	Understand the method of paraxial ray tracing through a thick lens or system of lenses, including telescopic systems and calculate magnifying power in afocal and non-afocal settings.	
A.16	Construct ray diagrams to show image formation through magnifying devices.	
A.17	Define and calculate linear, nominal and angular magnification for a simple magnifier or lens system.	
A.18	Estimate magnification required (with use of Snellen acuities) for distance, and near vision and any other relevant distances.	
A.19	Discuss types of optical aids for different visual tasks.	

Low Vision in Ophthalmic Dispensing

Unit 10 - continued

		Related GOC core competency
A.20	Be aware of British and International standards for low vision aids.	**6.3.1** *Dispenses relevant optical low vision aids and common types of non-optical low vision aid.* **6.3.2** *Advises patients on illumination glare and contrast.*
A.21	Consider the design, availability and suitability of non-optical aids.	
A.22	Consider the design, availability and suitability of electronic aids including mobile applications.	
A.23	Discuss training in the use of optical aids.	
A.24	Consider the psychology of low vision, recognising/describing the impact of sight loss and the stages of support required.	**6.4.1** *Advises patients about their impairment and its consequences.* **6.4.4** *Manages the aftercare of low vision patients.* **2.1.2** *Maintains confidentiality in all aspects of patient care.* **2.1.3** *Shows respect for all patients.*
A.25	Understand the aftercare management of low vision patients, including the frequency of aftercare visits required.	
A.26	Describe how to manage a patient's care in a safe, ethical and confidential environment.	
A.27	Discuss the role of other healthcare professionals and support groups in the low vision field, the ability to refer and the advantages of working in a multi-disciplinary team.	**6.4.2** *Understands the need for multi- and inter-disciplinary approaches to low vision care.* **6.4.3** *Refers low vision patients to other agencies where appropriate.*
A.28	Describe the aberrations that may affect magnifying devices and how may these be controlled.	**4.4.1** *Understands the conditions which cause visual impairment and to dispense the most appropriate low vision aid/advice.* **6.2.3** *Understands binocular vision in relation to low vision appliances.*
A.29	Explain convergence and accommodation requirements when using magnifying aids.	
A.30	Explain the use of specialist viewing techniques and calculate how a single thin lens could replace this system of lens.	

ASSESSMENT FORMAT			
Unit	10		
Title	Low Vision in Ophthalmic Dispensing		
Format	A combination of assessment and FQE practical examination		
Time allowed	N/A	**Theoretical pass mark**	40%
Year	3	**Practical pass mark**	60% per section

The Basic Principles of Contact Lens Wear

Unit 11

A. Contact lens practice

Related GOC core competency

The expected learning outcome is that the student should appreciate the basic principles of contact lens work, and be able to:

A.1 Describe the differences between RGP, soft and scleral contact lenses

A.2 Know the advantages and disadvantages of fitting a patient with RGP, soft and scleral contact lenses

A.3 Discuss the advantages and disadvantages of the different materials from which contact lenses can be manufactured.

A.4 Compare the advantages and disadvantages of contact lens wear with spectacle wear.

A.5 Know at foundation level, the therapeutic uses of contact lenses.

A.6 Consider the uses of contact lenses for patients with low vision.

A.7 Understand at foundation level, the choice of contact lens parameters and fitting philosophies for both RGP and soft lens patients.

A.8 Consider the factors affecting contact lens design.

5.1.1 *Understands contact lens types and materials, their benefits and disadvantages, and their most appropriate applications.*

5.1.2 *Understands the initial contact lens selection and fitting of RGP and soft contact lens patients.*

A.9 Discuss the different techniques for the insertion and removal of all types on contact lenses.

A.10 Discuss the purposes and types of contact lens care regimes and understand the common constituents of the solutions used.

5.2.1 *Understands the different methods of contact lens removal and the ability to remove the lens in an emergency, if feasible, and the ability to discuss the use of care regimes.*

A.11 Understand the purposes and the requirements of wearing schedules and aftercare visits.

5.2.1 *Understands both the aftercare of the patients wearing RGP and soft contact lenses and the management of any complications.*

A.12 Know the content of an initial assessment and of an aftercare consultation.

5.1.2 *Understands the initial contact lens selection and fitting of RGP and soft contact lens patients.*

A.13 Understand at foundation level, the management of contact lens aftercare issues.

A.14 Understand the signs, symptoms and differential diagnosis of serious contact lens complications.

A.15 Know the management options of serious contact lens complications.

A.16 Understand the legal and ethical matters relating to contact lens practice.

Related GOC core competency

5.2.2 *Understands both the aftercare of the patients wearing RGP and soft contact lenses and the management of any complications.*

ASSESSMENT FORMAT			
Unit	11		
Title	The Basic Principles of Contact Lens Wear		
Format	A theory examination of four written questions to be attempted from a choice of five		
Time allowed	1 hour	**Theoretical pass mask**	40%
Year	3		

Advanced Ophthalmic Dispensing Practice

Unit 12

A1. Spectacle checking

Related GOC core competency

4.1.3 *Measures and verifies optical appliances taking into account relevant standards where applicable.*

The expected learning outcome is that the candidate should, for bifocal lenses, be able to:

A1.1 Verify that lenses have been produced to a given prescription.

A1.2 Verify that all aspects of the spectacle frame or mount are correct.

A1.3 Verify that lenses have been correctly positioned in a spectacle frame or mount.

A1.4 Verify a given parameter of the spectacles against the relevant standards provided.

A2. Spectacle duplication

4.1.4 *Matches the form, type and positioning of lenses to meet all the patient's needs and requirements and provides appropriate advice.*

The expected learning outcome is that the candidate should, for progressive lenses, be able to:

A2.1 Provide all aspects of a pair of progressives in order to duplicate the lenses.

A3. Manual skills task

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.*

The expected learning outcome is that the candidate should be able to demonstrate their ability to manipulate and repair spectacle frames.

A3.1 In order to demonstrate these skills, students must carry out three of the following tasks:

- Replace faulty components on a compression plug rimless mount
- Remove a broken nylon cord, replace and re-fit the lens

Tasks two and three will be any of the following:

- Spring in lenses and set up frame
- Shorten a metal side by cutting and re-bending
- Increase the angle of let-back on a spectacle frame by filing
- Adjust a metal eye rim to accommodate high plus lenses or lenses made with a high plus front curvature

B. Spectacle dispensing

The expected learning outcome is that the candidate should be able to:

B.1 Measure and record details for a handmade, regular bridge frame.

B.2 Explain the significance of back vertex distance (BVD)

B.3 Explain how changing frame measurements may affect the overall fitting.

B.4 Dispense and fit the most appropriate frame to the paediatric head supplied.

B.5 Explain the development expected as the child grows and how this affects facial measurements and frame fitting.

B.6 Measure and record details for a frame with pads on arms.

B.7 Dispense bespoke progressive lenses and understand the relevance of the measurements required.

B.8 Explain how and when additional lens measurements are required and their significance.

B.9 Recall British and European standards terminology relating to frame and lens measurements.

Related GOC core competency

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patients' needs and requirements.*

4.1.4 *Matches the form, type and positioning of lenses to meet all the patient's needs and requirements and provides appropriate advice.*

4.5.1 *Accurately records facial measurements and dispenses the most appropriate appliance taking into account development, comfort, function and safety.*

9.3.1 *Takes accurate facial measurements.*

9.3.2 *Understands changes in measurements as the facial features develop.*

9.3.3 *Advises on appropriate frames and availability of special features.*

9.4.1 *Advises on lens choice with emphasis on safety, comfort and cosmesis.*

9.4.2 *Measures for lens positioning.*

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.provides appropriate advice.*

Unit 12 continues over the page

C. Prescription analysis

The expected learning outcome is that the candidate should be able to:

C.1 Interpret and explain aspects of patient case records.

C.2 Discuss the taking and recording of relevant information.

C.3 Explain how decisions are made in determining products dispensed and services provided.

C.4 Demonstrate how to communicate product information and confirm patients understanding.

C.5 Perform simple mathematical functions such as toric transposition, prismatic effect and decentration calculations.

C.6 Demonstrate how to communicate effectively when dealing with patient complaints.

C.7 Explain how to deal with patient's fears, anxieties and concerns about their visual welfare.

C.8 Describe how to recognize the patient's expectations and aspirations and how to manage the situations where these cannot be met.

C.9 Demonstrate how to describe lenses in terms of material, type, form, edge finish and additional features

Related GOC core competency

2.2.5 *Interprets and responds to existing records.*

4.1.1 *Identifies anomalies in a prescription and implements the appropriate course of action.*

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patients' needs and requirements.*

4.2.1 *Advises on personal eye protection regulations and relevant standards, and appropriately advises patients on their occupational visual requirements.*

4.3.2 *Demonstrates knowledge of frame and lens manufacturing and the application of special lens treatments.*

4.4.1 *Understands conditions which cause visual impairment and to dispense the most appropriate low vision aid/advice.*

6.1.1 *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*

6.2.1 *Understands the assessment of visual function, including the use of specialist charts, the effects of illumination, contrast and glare.*

6.2.2 *Understands the assessment of the visual field of patients with reduced vision.*

6.2.3 *Understands binocular vision in relation to low vision appliances.*

6.4.1 *Advises patients about their impairment and its consequences.*

6.4.2 *Understands the need for multi and interdisciplinary approaches to low vision care.*

1.1.1 *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.*

1.1.2 *Elicits the detail and relevance of any significant symptoms.*

1.1.3 *Identifies and responds appropriately to patient's fears, anxieties and concerns about their visual welfare.*

1.2.1 *Understands the patient's expectations and aspirations and manages situations where these cannot be met.*

1.2.2 *Communicates with patients who have poor or non-verbal communication skills, or those who are confused, reticent or might mislead.*

1.2.3 *Discusses with the patient the importance of systemic disease and its ocular impact, its treatment and the possible side effects of ocular medication.*

6.4.1 *Advises patients about their impairment and its consequences.*

6.4.3 *Refers low vision patients to other agencies where appropriate.*

6.4.4 *Manages the aftercare of low vision patients.*

9.1.1 *Directs communication to the child in an appropriate manner.*

9.1.2 *Discuss with the carer the factors influencing appropriate dispensing.*

Case records may include the following topics for single vision, bifocal, trifocal and progressive power lenses, as appropriate:

Related GOC core competency

- Paediatric (including pre-school) dispensing.
- Complex prescriptions.
- Occupational dispensing.
- Sports eyewear dispensing.
- Gross anisometropia.
- Prescribed tints.
- Prescribed prisms.
- Personal eye protection.
- Low Vision – to include referral procedure.
- Legalities of contact lens supply.
- Complex lens description.
- Patient history.
- Prescription details.
- Discussion on lens types suitable for the prescription.
- Fitting and adjustment details.
- Advice and/or instructions given to patient.

Unit 12 continues over the page

D. Ocular abnormalities and Special Optical Appliances (SOA)

The expected learning outcome is that the candidate should be able to:

D.1 Recognise ocular pathological conditions.

D.2 Explain what action a GOC registered dispensing optician should take when presented with an ocular pathological condition.

D.3 Explain when and to whom any referral should be made.

D.4 Recognise where emergency action may be needed.

D.5 Record all relevant information relating to a referral.

D.6 Recall the legal obligations of a GOC registered dispensing optician in caring for patients.

D.7 Discuss a variety of suitable low vision appliances for given scenarios.

D.8 Discuss a variety of suitable SOA's for a given scenario.

D.8 Give advice for the patient on the use of special optical or low vision appliances.

Related GOC core competency

1.1.2 *Elicits the detail and relevance of any significant symptoms.*

6.2.1 *Understands the assessment of visual function, including the use of specialist charts, the effects of illumination, contrast and glare.*

6.2.2 *Understands the assessment of the visual field of patients with reduced vision.*

8.1.1 *Identifies common diseases of the external eye and related structures.*

8.1.2 *Understands symptoms associated with internal eye disease.*

8.1.3 *Understands the clinical treatment of a range of significant ocular diseases/disorders and conditions.*

8.1.5 *Understands the implications of the manifestations of eye disease.*

8.1.6 *Recognises and deals with ocular emergencies.*

4.2.2 *Recommends and dispenses special optical appliances where appropriate.*

4.4.1 *Understands conditions which cause visual impairment and to dispense the most appropriate low vision aid/advice.*

6.2.3 *Understands binocular vision in relation to low vision appliances.*

6.3.1 *Dispenses relevant Optical low vision aids and common types of non-optical low vision aids.*

6.3.2 *Advises patients on illumination glare and contrast.*

6.4.1 *Advises patients about their impairment and its consequences.*

E. Assessment of portfolio

The expected learning outcome is that the candidate should be able to:

E.1 Demonstrate their ability to produce clear and legible case records.

E.2 Demonstrate their ability to produce full and accurate case records

E.3 Produce the correct number of each type of prescription and scenario, as laid down in the PQP guidelines.

E.4 Demonstrate an ability to justify their dispensing choices

Related GOC core competency

1.1.1 *Obtains relevant history and information relating to general health, medication, family history, work, lifestyle and personal requirements.*

1.2.4 *Explains to the patient the implications of their pathological or physical eye condition.*

1.2.5 *Communicates effectively with any other appropriate person involved in the care of the patient.*

2.2.4 *Creates and keeps full, clear, accurate and contemporaneous records.*

2.2.5 *Interprets and responds to existing records.*

4.1.1 *Identifies anomalies in a prescription and implements the appropriate course of action.*

4.1.2 *Dispenses and advises on a wide range of lenses and frames, taking into account the patient's needs and requirements.*

4.2.1 *Advises on personal eye protection regulations and relevant standards, and appropriately advises patients on their occupational visual requirements.*

4.2.2 *Recommends and dispenses special optical appliances where appropriate.*

4.4.1 *Understands conditions which cause visual impairment and to dispense the most appropriate low vision aid/advice.*

5.2.1 *Understands the different methods of contact lens removal and the ability to remove the lens in an emergency, if feasible, and the ability to discuss the use of care regimes.*

6.1.1 *Considers the effectiveness of current refraction of patients with low visual acuity and to refer back where appropriate.*

6.2.1 *Understands the assessment of the visual function, including the use of specialist charts, the effects of illumination, contrast and glare.*

6.3.1 *Dispenses relevant optical low vision aids and common types of non-optical low vision aid.*

6.3.2 *Advises patients on illumination glare and contrast.*

6.4.1 *Advises patients about their impairment and its consequences.*

6.4.2 *Understands the need for multi- and inter- disciplinary approaches to low vision care.*

6.4.3 *Refers low vision patients to other agencies where appropriate.*

6.4.4 *Manages the aftercare of low vision patients.*

9.3.1 *Takes accurate facial measurements.*

9.3.3 *Advises on appropriate frames and availability of special features.*

9.4.1 *Advises on lens choice with emphasis on safety, comfort and cosmesis.*

9.4.2 *Measures for lens positioning.*

9.5.1 *Fits the appliance effectively and has the ability to adjust and repair the appliance.*

Advanced Ophthalmic Dispensing Practice

Unit 12 - continued

ASSESSMENT FORMAT			
Unit	12		
Title	Advanced Ophthalmic Dispensing Practice		
Format	A combination of oral and practical examinations		
Time allowed	5 hours	**Practical pass mark**	60% per section
Year	3		

Preliminary Qualifying Examination Year 1

Ophthalmic Dispensing Practice

Section A - Single vision lenses

1 hour total **Pass mark** 50%

Candidates will be required to complete the following tasks and record:

A1 Use a lens measure to find the base curve, cross curve and sphere curve on two uncut lenses.
15 minutes

A2 Use a focimeter to find the powers of a pair of glazed toric single vision lenses, locate the vertical position of the optical centres and the optical centre distance.
15 minutes

A3 Hand neutralise a pair of spectacles glazed with toric lenses, locate the vertical position of the optical centres and the optical centre distance.
30 minutes

Section B - Frame measurements and materials

1 hour total **Pass mark** 50%

Candidates will be required to measure and record:

B1 A range of measurements for a fixed pad bridge frame, regular bridge frame and a frame with pads on arms.
30 minutes

B2 Identify and describe types of frame construction, materials and properties.
30 minutes

Section C - Spectacle fitting and facial measurements

1 hour total **Pass mark** 50%

Candidates will be required to demonstrate their ability to:

C1 Adjust a plastics material frame to fit a patient, and discuss tools used.
10 minutes

Adjust a metal frame to fit a patient, and discuss tools used.
10 minutes

Adjust a rimless mount to fit a patient, and discuss tools used.
10 minutes

C2 Take a full set of facial measurements from a patient.
30 minutes

Section D - Single vision prescription analysis and lens description

30 minutes total **Pass mark** 50%

Candidates will be required to demonstrate, at preliminary level, their ability to discuss and interpret a variety of prescriptions and prescribers' comments as well as a verbal description of presented lenses:

- General type
- Material
- Form
- Edge finish
- Additional features

30 minutes

Practical Examinations

Final Qualifying Examination Year 3

Advanced Ophthalmic Dispensing Practice

Section A - Lenses and manual skills

1 hour total

A1. Spectacle checking

Candidates will be required to complete the following tasks and record the information required. Check the following items for a spectacle frame glazed with bifocal lenses against a written order:

a) Spherical power
b) Cylindrical power
c) Axis
d) Addition
e) Verify a given parameter conforms to BS tolerances
f) Segment top position
g) Geometric inset
h) Any additional features relating to the lenses
i) Frame details and measurements

15 minutes **Pass mark** 60%

A2. Spectacle duplication

Candidates will be required to complete the following tasks and record any information required.
Candidates will be expected to record the following measurements in order for a pair of spectacles glazed with progressive power lenses to be duplicated:

a) Identify type of progressive power lens from a list of engravings given
b) Spherical power
c) Cylindrical power
d) Axis
e) Addition
f) The magnitude and direction of any prismatic element
g) Monocular centration distances
h) Fitting cross heights measured in relation to the horizontal centre line
i) Any additional features relating to the lens
j) Frame details and measurements

15 minutes **Pass mark** 60%

A3. Manual skills task

The expected learning outcome is that the candidate should be able to demonstrate their ability to manipulate and repair spectacle frames.
In order to demonstrate these skills, candidates must carry out three of the following tasks:

Task one will be either:

- Replace faulty components on compression plug rimless mount
- Remove a broken nylon cord, replace and re-fit the lens

Tasks two and three will be any of the following:

- Spring in lenses and set up frame
- Shorten a metal side by cutting and re-bending
- Increase the angle of let-back on a spectacle frame by filing
- Adjust a metal eye rim to accommodate high plus lenses or lenses made with a high plus front curvature

30 minutes **Pass mark** 60%

Section B - Spectacle Dispensing

1 hour 30 minutes total

Candidates will be required to complete the following dispensing tasks:

B1 Dispense handmade frame
Measure and record details for a handmade, regular bridge frame fitted with single vision lenses.

30 minutes **Pass mark** 60%

B2 Paediatric dispense
Select and fit the most appropriate frame. Measure and record the details for a bifocal dispense.

30 minutes **Pass mark** 60%

B3 Bespoke progressive dispense
Select the most appropriate frame, measure and record details for the frame with pads on arms. Fit the desired frame to the patient before taking the relevant progressive power measurements and any specific measurements required for the bespoke progressive power lens chosen.

30 minutes **Pass mark** 60%

Section C - Prescription analysis

1 hour 30 minutes total

Pass mark 60%

Candidates are required to discuss prescriptions and describe presented lenses. Case record prescriptions may include the following topics for single vision, bifocal, trifocal and progressive power lenses as appropriate:

- Paediatric (including pre-school) dispensing
- Complex prescriptions
- Occupational dispensing
- Sports eyewear dispensing
- Gross anisometropia
- Prescribed tints
- Prescribed prisms
- Personal eye protection
- Low vision
- Patient history
- Prescription details
- Discussion on lens types suitable for the prescription
- Fitting and adjustment details
- Advice and/or instructions given to patient
- Contact lens legalities

Section D - Ocular abnormalities and special optical appliances

1 hour total

Candidates will be required to complete station exams which may comprise of the following scenarios:

D1 Identify pathological ocular conditions from photographs or illustrations.
10 minutes

D2 Identify a pathological condition from a photograph or illustration and follow the correct referral procedure.
10 minutes **Pass mark** 60%

D3 Name/ identify the low vision aids provided and describe the benefits and limitations of each device.
10 minutes

D4 From the case notes discuss the benefits and limitations of the low vision appliance for the patient.
10 minutes **Pass mark** 60%

D5 Describe the design features, fit and advice for particular special optical appliances.
10 minutes

D6 Describe the design features, fit and advice for the particular sports appliances.
10 minutes **Pass mark** 60%

Section E - Assessment of portfolio

The candidate will be required to submit their portfolio on the examination day for assessment by an ABDO examiner. The assessment will be based on the 51 case records. The candidate will collect the Portfolio at the end of the day.

This section is marked pass or fail

Notes

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