

Module Details	
Module Title:	Pure and Visual Optics
Module Code:	OPT4003-B
Academic Year:	2019-20
Credit Rating:	20
School:	School of Optometry and Vision Science
Subject Area:	Optometry
FHEQ Level:	FHEQ Level 4
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	Hours
Tutorials	48
Laboratory	20
Directed Study	132

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims
To introduce students to the principles of geometric optics; to enable the student to apply those principles to the practice of optometry and the human eye; to describe the characteristics of optical instruments; to explain the limitations of the human eye.

Outline Syllabus
Self-study, Seminars and Tutorials: Positive lenses and images. Negative lenses. Law of refraction. Optics of the Eye, Ametropia. Measuring Ametropia. Optics of Spectacles. Astigmatism. Two or more lenses. Thick lenses. Magnifiers and Telescopes. Accommodation and Presbyopia. Light as a wave. Aberrations and wavefronts. Retinoscopy. Ophthalmoscopy. Mirrors. Derivation of the Paraxial Equation.

Practical classes: Image formation by lenses. Refraction. Reflection. Negative Lenses. Astigmatic lenses. Two lenses. Telescopes. Principal planes and nodal points. Accommodation. Thick lenses.

Learning Outcomes

1	Calculate the properties of optical systems.
2	Describe the optics of the eye and explain their impact on image quality.
3	Explain how various optical instruments work.
4	Describe what an arrangement of lenses or mirrors does to light.
5	Describe the optical principles underlying optometric practice.
6	Measure important parameters of optical systems.
7	Improve application of numbers through (i) collection, recording and presentation of data, (ii) repeated use of simple geometry and algebra.
8	Working with others towards identified targets in laboratory sessions.

Learning, Teaching and Assessment Strategy

The module is taught using (a) recorded videos and written materials for self-study (b) an extensive series of problem-solving exercises (c) a series of tutorials and seminars (d) a series of practicals. The recorded and written materials take the place of lectures.

The coursework problem-solving exercises are central to the teaching of this module. Students, when ready, take or retake a test on one of 20 available topics, and are awarded up to 1.5% of the final module mark per test.

Each test is between 5 to 10 minutes long, but is not time limited. Students are regularly retested on tests they have already passed. A failed retest means the student loses the marks they previously had for that test, and must retake the test again to regain those marks. Retesting ensures that students must retain old material.

The test passes are added into a single number for the purposes of progression, but the main purpose of the tests is to provide continuous feedback on learning to the students. They are expected to use tutorial and seminar time to resolve any issues they are having with the tests of material. Practice versions of the tests are always available.

Mode of Assessment

Type	Method	Description	Length	Weighting
Referral	Examination - closed book	Supplementary assessment: closed book unseen written exam	2 hours	100%
Summative	Coursework	Practical assessment		30%

Summative	Computerised examination	Closed book unseen computerised examination	2 hours	70%
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Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>.

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.