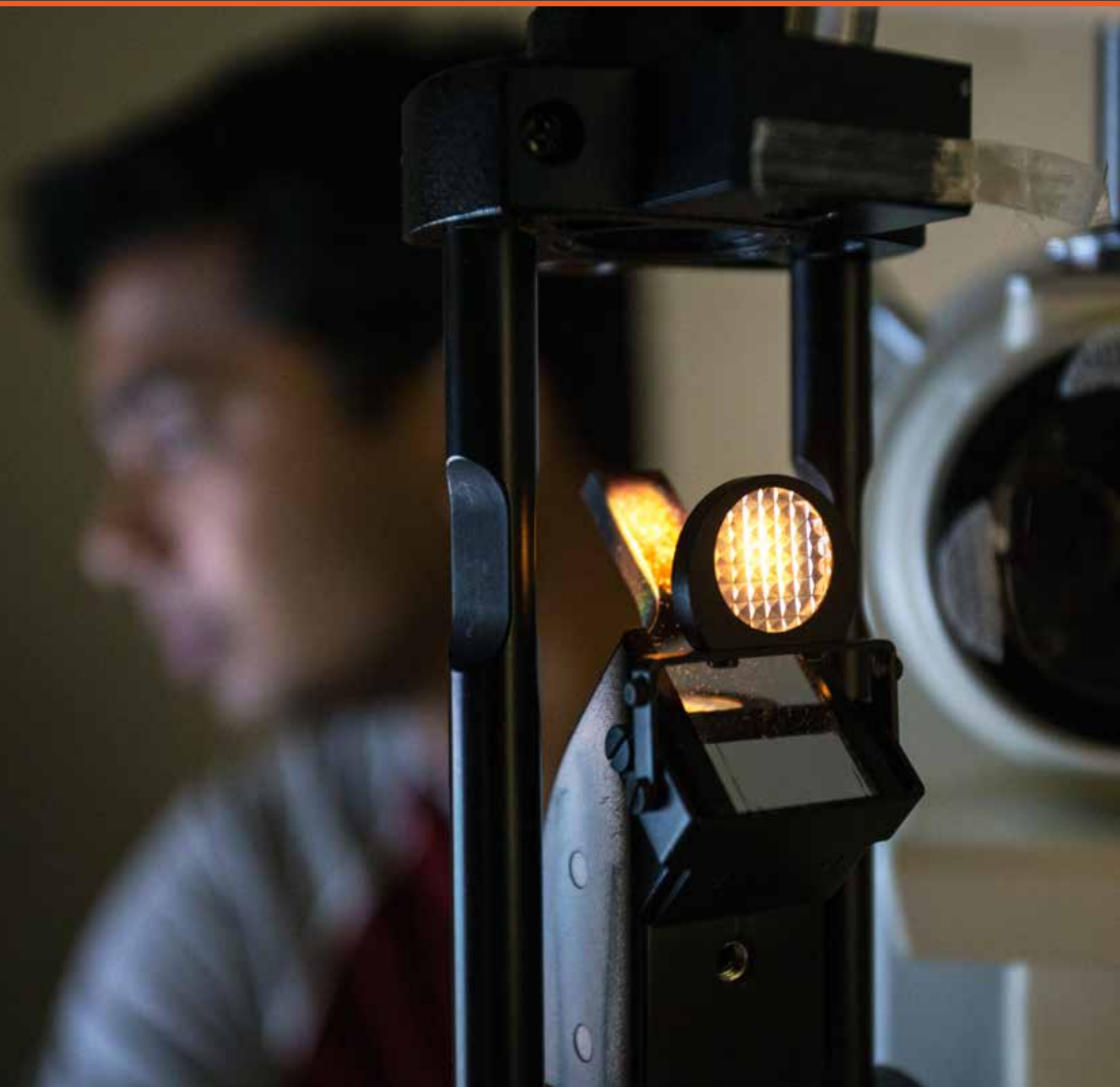
Brien Holden® VISION INSTITUTE ACADEMY

Global Optometry Resources

Physiological Optics



PHYSIOLOGICAL OPTICS

STUDENT MANUAL

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Brien Holden Vision Institute Foundation (formerly ICEE) is a Public Health division of Brien Holden Vision Institute

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COURSE OUTLINE

COURSE AIM

This module aims at providing the student with knowledge of the relation between optical and visuo-psychological entities comprising the hierarchy of visual information processing, to enable the student understand clinical issues relating to the assessment of human visual performance.

COURSE OBJECTIVES

By the end of the module the student should be able to apply the knowledge gained in assessing the effect of ophthalmic lenses and clinical conditions on human visual performance.

By the end of the module the student should be able to:

- Explain the eye as an optical system
- Describe different ways to measure optical parameters
- List the characteristics of a schematic eye
- Explain the clinical relevance of differing retinal image sizes
- Describe the optical constraints of correcting aphakia and pseudophakia
- Explain the optical effects of accommodation
- Summarise the optical principles of astigmatism
- Describe the characteristics of different forms of optical aberrations
- Explain the process of emmetropization

COURSE CONTENT

The topics covered in this course include:

- The eye as an optical instrument
- Measurement of optical parameters
- Schematic eyes
- Retinal image size
- Aphakia and psuedophakia
- Accommodation
- Astigmatism
- Optical aberrations
- Emmetropization

COURSE DELIVERY

This module is designed to be delivered over 1 semester. Total delivery time for Physiological Optics is 23 hours of lectures.

Learning and Teaching Methods & Resources

The suggested teaching methods for this course include: PowerPoint presentations, discussions, case studies, clinical attachments, and question and answer sessions.

Suggested equipment for teaching includes:

- Computer & projector
- White board
- Handouts

RECOMMENDED ASSESSMENT

- Written examination
- Assignments

TEXT BOOKS

Prescribed texts

- Brien Holden Vision Institute Global Optometric Resource Module. Brien Holden Vision Institute. 2010.
- Krueger SRR, Applegate RA and MacRae M. Wavefront Customized Visual Correction: The Quest for Super Vision. 2nd Edition. Slack, Inc. 2004.
- Duane TD. Clinical Ophthalmology: Volumes I & II. Harper and Row, Philadelphia. 1982.
- Tunnacliffe AH. Introduction to Visual Optics. Great Britain: The Eastern Press. 1984.
- Grosvenor T and Flom MC. Refractive Anomalies. 3rd Edition. Boston: Butterworth-Heinemann. 1990.
- Atchison DA and Smith G. Optics of the Human Eye. Oxford: Butterworth-Heinemann. 2000.
- Bennett AG and Rabbetts RB. Clinical Visual Optics. 3rd Edition. London: Butterworth-Heinemann. 1998.

Recommended texts

- Obstfeld H, Optics in Vision, Butterworth, 1982.

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