Optics education in an optometric setting

Vasudevan Lakshminarayanan, Aparna Raghuram
Optics education in an optometric setting

Vasudevan Lakshminarayanan and Aparna Raghuram
College of Optometry, University of Missouri-St. Louis, 8001 Natural Bridge Road, Saint Louis, MO 63121-4499
telephone: 314-516-6533; fax: 314-516-6712; e-mail: vengu@umsl.edu

Abstract: We discuss optics education within the context of an Optometric professional program
leading to a degree of Doctor of Optometry (O.D.). Basic course work in Geometric, Physical,
Ophthalmic and Visual Optics will be described and we will discuss how basic optical phenomena
can be made relevant to the Optometric student with different academic backgrounds.

©2003 Optical Society of America

OCIS codes: (000.2060) Education; (000.1430) Biology and medicine

Optics (geometric, physical and physiological) is an integral part of the basic science portion of an Optometric
curriculum. All students in professional courses leading to the degree of Doctor of Optometry (O.D.) in north
American Universities undergo a rigorous program of study stressing basic health sciences and optical sciences.

In general the optometric student population takes a semester of geometric optics, followed by a second semester
of physical optics (including photometry) in their first year of the four year program of study for the OD degree.
Concurrently or later they also take semester (or more) long courses in Ophthalmic optics, visual optics,
environmental optics and other applied areas of optics (e.g., lighting). Their second and succeeding year courses
build up on the foundation and covers vision science/physiological optics.

One of the most important factors in teaching in such a program is to make the fundamental optical science
relevant to the future eye-care professional. One should also take into account the fact that the students (who in
general usually have undergraduate degrees in the biological sciences) have varying abilities in mathematics and
physics, even though two semesters of basic physics and a semester of calculus is a minimum pre-requisite (in most
Schools and Colleges of Optometry) for application to the professional program.

Additionally, certain topical areas which are only covered briefly (if at all) in the traditional undergraduate
physics/engineering optics courses such as spherocylindrical lenses, addition of obliquely crossed spherocylinders,
the CIE $V_{\lambda}$ curve will have to be taught in such a curriculum. Also to be taught are the optics of ophthalmic
devices, ophthalmic materials and so forth. It is also important to illustrate how these topics and ideas are used in a
symbiotic manner with their clinical training.

Thus, teaching optics in an optometric curriculum introduces its own set of challenges and calls for innovative
teaching examples and methods. These will be described and discussed in this presentation.

Downloaded From: https://www.spiedigitallibrary.org/conference-proceedings-of-spie on 02 Sep 2019
Terms of Use: https://www.spiedigitallibrary.org/terms-of-use