

ESSEX COUNTY COLLEGE
Nursing and Allied Health Division
OPH 126 – Ophthalmic Materials
Course Outline

Course Number & Name: OPH 126 Ophthalmic Materials

Credit Hours: 3.0 **Contact Hours:** 3.0 **Lecture:** 3.0 **Lab:** N/A **Other:** N/A

Prerequisites: acceptance into the Vision Care program

Co-requisites: None

Concurrent Courses: OPH 123

Course Outline Revision Date: Fall 2010

Course Description: This course provides an introduction to the field of ophthalmic optics. The roles of the Ophthalmic Laboratory Technician, Ophthalmic Dispenser, Optometrist, and Ophthalmologist will be explained. The course continues with the history of lenses, basic optical terminology, lens characteristics, the metric system, and the refraction of light. Instructions will also include calculation of lens curvature, lens power, and prism. The gross anatomy of the eye will be introduced, as well as the use of optical charts and graphs.

Course Goals: Upon successful completion of this course, students should be able to do the following:

1. define and explain the fundamental concepts of Ophthalmic Optics; and
2. explain and apply basic physics concepts and formulae used in Ophthalmic Optics.

Measurable Course Performance Objectives (MPOs): Upon successful completion of this course, students should specifically be able to do the following:

1. Define and explain fundamental concepts of Ophthalmic Optics:
 - 1.1 *define basic optical terminology;*
 - 1.2 *label correctly the basic anatomy of the eye;*
 - 1.3 *discuss the history and development of modern lenses both in design and manufacture;*
 - 1.4 *describe lens curvature, transposition, lens forms, lens characteristics, and the use of the lens cross; and*
 - 1.5 *indicate the cause of the basic refractive errors*
2. Explain and apply basic physics concepts and formulae used in Ophthalmic Optics:
 - 2.1 *explain the laws of refraction;*
 - 2.2 *describe the effect of lenses on light;*
 - 2.3 *apply basic lens formulae; and*
 - 2.4 *use Prentice's Law to calculate prism in spherical and compound lenses*

Methods of Instruction: Instruction will consist of lectures, demonstrations, guest speakers, and audio-visual aids.

Outcomes Assessment: Quiz, test and exam questions are blueprinted to course objectives. Data is collected and analyzed to determine the level of student performance on these assessment instruments in regards to meeting course objectives. The results of this data analysis are used to guide necessary pedagogical and/or curricular revisions.

Course Requirements: All students are required to:

1. Maintain regular attendance.
2. Complete assigned homework.
3. Take part in class discussions.
4. Take all quizzes, tests, and exams given.

Methods of Evaluation: Final course grades will be computed as follows:

Grading Components	% of final course grade
<ul style="list-style-type: none">• 3 or more Written Tests (dates specified by the instructor) Tests will show evidence of the extent to which students meet course objectives, including but not limited to identifying and applying concepts, analyzing and solving problems, and stating appropriate conclusions using correct terminology.	75%
<ul style="list-style-type: none">• 1 Written Final Exam The same objectives apply as with tests, but it is anticipated that students will provide increased evidence of synthesizing a combination of concepts.	25%

NOTE: Students must obtain an overall average of at least 70% to pass the course.

Academic Integrity: Dishonesty disrupts the search for truth that is inherent in the learning process and so devalues the purpose and the mission of the College. Academic dishonesty includes, but is not limited to, the following:

- plagiarism – the failure to acknowledge another writer’s words or ideas or to give proper credit to sources of information; could result in a
- cheating – knowingly obtaining or giving unauthorized information on any test/exam or any other academic assignment;
- interference – any interruption of the academic process that prevents others from the proper engagement in learning or teaching; and
- fraud – any act or instance of willful deceit or trickery.

Violations of academic integrity will be dealt with by imposing appropriate sanctions. Sanctions for acts of academic dishonesty could include the resubmission of an assignment, failure of the test/exam, failure in the course, probation, suspension from the College, and even expulsion from the College.

Student Code of Conduct: All students are expected to conduct themselves as responsible and considerate adults who respect the rights of others. Disruptive behavior will not be tolerated. All students are also expected to attend and be on time all class meetings. No cell phones or similar electronic devices are permitted in class. Please refer to the Essex County College student handbook, *Lifeline*, for more specific information about the College’s Code of Conduct and attendance requirements.

Course Content Outline: based on the text **Systems for Ophthalmic Dispensing**, 3rd edition, by Brooks and Borish; published by Butterworth and Heinemann; ISBN #: 13 978-0-7506-7480-5

Week	Class Topics/Reading Assignments
1	Introduction of the field manufacture of glass, plastics and frames Read chapters 1 & 21
2	Ophthalmic terminology, the metric system and refractive errors Read chapters 2 & 13
3	Lensometer nomenclature and their functions Read chapter 6
4	Introduction to spectacle Rx's and commonly used terms and abbreviations Read chapter 16
5	Review all materials since week 1 Test #1 Index of refraction & Snell's Law Read chapter 14
6	Relationship of light & lens surfaces Read chapter 14 (continued)
7	Lens profiles, meniscus lenses and base curve theory Re-read chapter 16
8	Boxing system, cylindrical lenses, and dioptric power Re-read chapter 2
9	Review all materials since week 6 Test #2 Use of lens cross and lens graph Re-read chapter 16
10	Plus and minus cylinder from and lens aberrations Re-read chapter 16 (continued)
11	Effective power of a cylinder away from the axis Read chapter 15
12	Nu values chromatic aberrations Read chapter 12
13	Review all materials since week 10 Test #3 Anatomy of the eye prism Read chapter 18
14	Prism Read chapter 18 (continued)
15	Final Exam