

**RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE**

OPTH-100 OPHTHALMIC MATERIALS I - LECTURE

I. Basic course Information

A. Course Number and Title: OPTH-100 Ophthalmic Materials I – Lecture

B. Modified course: Modified

C. Date of Proposal: Semester: Fall Year: 2022

D. Effective Term: Fall 2023

E. Sponsoring Department: Health Science Education

F. Semester Credit Hours: 3

G. Weekly Contact Hours: 3 Lecture: 3

Lab: 0

Out of class student work per week: 6

H. Prerequisites/Corequisites: None

I. Additional Fees: None

J. Name and E-Mail address of Department Chair and Divisional Dean at time of

approval: Chair Linda Romaine linda.romaine@raritanval.edu

Dean Sarah Imbriglio sarah.imbriglio@raritanval.edu

II. Catalog Description

Prerequisites: None

Corequisites: None

An introduction to the basic principles of ophthalmic lenses. Topics include a history of development, definition of terminology, the geometry of lens designs,

physical characteristics of lens materials, optical characteristics, and mathematical formulas used in lens computation.

If the student is registered with the State Board as an apprentice, Ophthalmic Materials I must be successfully completed to be eligible for the State Board Qualifying Technician Exam.

III. Statement of Course Need:

- A. This is a required course for the Ophthalmic Science- AAS degree, Ophthalmic Laboratory Technician, Certificate of Completion-Apprentice Option, and Ophthalmic Science (Opticianry) Certificate-Apprenticeship Option.
- B. This course is not designed for transfer.

IV. Place of Course in College Curriculum

- A. Free elective.
- C. This course meets a program requirement for the Ophthalmic Science- AAS degree, Ophthalmic Laboratory Technician, Certificate of Completion-Apprentice Option, and Ophthalmic Science (Opticianry) Certificate-Apprenticeship Option.

V. Outline of Course Content

- A. Historical review, manufacturing process, light theory and conventions.
- B. Electromagnetic spectrum, ultraviolet spectrum, refraction.
- C. Index of refraction, speed of light, Snell's law.
- D. Dioptric System, metric system review, focal length.
- E. Lens Characteristics, history of lens form, radius of curvature.
- F. Cylindrical surfaces, types of cylinder power, optical cross, lens graphs.
- G. Trade names, axis, refractive errors, Rx, astigmatism, classifications of astigmatism, interval of Sturm, review lens parameters.
- H. Nominal power of lenses, transposition, spherical equivalent, crossed cylinders.
- I. True power, marked power, back vertex thickness formula, lens clock, lensometer.
- J. Cylinder power at oblique axes, percentage rules, review lens parameter effect on Rx.
- K. Prism definition, components and effect on light, thickness difference prism vs. decentration.
- L. Prism component of lenses, prism measurement system, displacement, Prentice's rule, creating prism, prismatic development through errors, base direction, decentration problems.

VI. A. Course Learning Outcomes

At the completion of the course, students will be able to:

1. Demonstrate a foundation in the language of ophthalmic optics (GE- 1)
2. Develop an understanding of ophthalmic prescriptions and an appreciation for the intricacies of correcting human vision (GE- 2)
1. Demonstrate a historical perspective on glass, lenses and spectacles according to the information contained in their workbook.
2. Describe the electromagnetic spectrum and all of its components and their effect on human vision as discussed in lecture.
3. Explain the many characteristics of ophthalmic lenses and how each characteristic applies to the ophthalmic prescription.
4. Identify human refractive errors and how ophthalmic lenses correct these errors.
5. Explain the Diopter System and its application to ophthalmic lenses.
6. Describe all of the components of lens power and how each effects the prescription.
7. Demonstrate a complete understanding of prismatic power and its relationship to ophthalmic lenses and the patient's pathology.
8. Demonstrate a firm foundation in the study of Ophthalmic Optics in order to facilitate more advanced study.

B. Assessment Instruments

1. tests
2. essays

VII. Grade Determinants

- A. tests
- B. quizzes
- C. essays

Given the goals and outcomes described above the following methods of teaching and learning may be used:

- A. lecture/discussion
- B. small group work
- C. guest speakers

VIII. Texts and Materials

- A. Textbook: Ophthalmic Materials I & II Workbook and Study guide
(In-house publication)
- B. Powerpoint presentation
- C. Video

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

No unusual resources are required

X. Honors Option: N/A