OPH 101
MATH FOR OPTICIANS

COURSE DESCRIPTION:

Prerequisites: MAT 070 or satisfactory score or DMA 010, 020, 030, 040, 050,
                        placement test and Enrollment in the OpticalApprentice Certificate program
Corequisites: None

This course covers the arithmetic, algebra, geometry, and trigonometry necessary to evaluate optical formulas. Topics include signed arithmetic, evaluation and solution of equations, use of the calculator, and basic trigonometric functions. Upon completion, students should be able to evaluate formulas as used in opticianry courses. This course is intended for a certificate program. Course Hours Per Week: Class, 3. Semester Hours Credit, 3.

COURSE OBJECTIVES:

With at least 77% competency, the student will demonstrate the following:

a. Convert measurement numbers within the English and metric systems and between the two systems.
b. Perform arithmetic operations with signed numbers.
c. Use algebraic terminology and perform operations with algebraic expressions.
d. Solve linear equations.
e. Use linear equations to solve application problems.
f. Calculate ratios, solve proportions, and use proportions to solve practical application problems.
g. Use the Pythagorean Theorem.
h. Find the values of the trigonometric functions.

OUTLINE OF INSTRUCTION:

I.   The metric system of measurement
        A. The English and the metric systems
        B. The metric system

II.   Signed numbers
        A. Negative numbers
        B. Addition and subtraction of signed numbers
        C. Multiplication of signed numbers
        D. Division of signed numbers
        E. Order of operations

III.   Introduction to algebra
     A. Literal numbers
     B. Algebraic terms and definitions
     C. Grouping symbols and grouping

IV.   Simple equations
     A. Basic ideas about equations
     B. Solving first-degree equations in one variable
     C. Solving application problems using first-degree equations in one variable

V.   Fractional equations and formulas
     A. Fractional equations
     B. Literal equations: formulas
     C. Evaluation of formulas

VI.   Ratio and proportion
     A. Ratio
     B. Proportion
     C. Proportion applications

VII.   Right triangle trigonometry
     A. The right triangle and the Pythagorean Theorem
     B. Definitions of the trigonometric ratios
     C. Values of the trigonometric functions

REQUIRED TEXTBOOK AND MATERIALS:

Christopher, John. <u>Introductory Technical Mathematics</u>. 2ed. Prentice Hall, 1991.

Scientific calculator

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 919-536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1209.