



Republic of the Philippines  
OFFICE OF THE PRESIDENT  
COMMISSION ON HIGHER EDUCATION

**CHED MEMORANDUM ORDER (CMO)**

**NO. 47**

**Series of 1997**

**SUBJECT: UPDATED POLICIES AND STANDARDS FOR  
OPTOMETRY EDUCATION**

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In accordance with pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the "Higher Education Act of 1994", and for the purpose of rationalizing Optometry Education in the country with the end in view of keeping apace with the demands of global competitiveness, the following policies and standards for Optometry Education are hereby adopted and promulgated by the Commission, thus;

**Article 1  
MISSION STATEMENT**

Section 1. The main objective of the Optometry Education is to provide the country with Optometrists who possess:

- 1.1 High level of competence to deliver the full spectrum of optometric services, which consist of: the prevention, examination and evaluation, diagnosis, management and rehabilitation of disorders, dysfunctions and diseases of the visual system, the eye and associated structures;
- 1.2 A mastery of a core knowledge in optometry and related medical sciences, and sufficient thinking abilities to analyze new information so as to continually add to this knowledge base;
- 1.3 The qualities, attitudes and values essential to the delivery and promotion of eyecare service to the Filipino people; and
- 1.4 The desire to improve optometry by advancing the knowledge, skills and values of the profession.

**Section 2.** To achieve this objective, there shall be a well-planned Basic and Professional Program for optometric education that meets established international standards. The Program should be Competency, Research and Problem-based, leading towards Primary Care Optometry and the basics of the Specialty Fields in optometry. The program therefore should:

- 2.1 Provide optometry students with an academic and clinical environment conducive to the acquisition of knowledge, skills, attitudes and values, with emphasis on the development of creative and critical thinking.
- 2.2 Provide the students with adequate facilities and competent instruction in all subjects;
- 2.3 Prepare and train students to appreciate and undertake research;
- 2.4 Train the students for service to the patients as well as to the community, as a recognized member of the Health Care Team;
  - 2.4.1 This training should enable the student to function in an inter-professional referral network in the health sciences through an internship and externship program in accredited private, industrial and school clinics, hospitals, and community health centers;
  - 2.4.2 This training should be holistic as to include the preventive, promotive and restorative aspect of eyecare;
- 2.5 Provide an environment where values and attitudes conducive to professionalism, smooth inter-professional relations, understanding and cooperation are developed by role-modeling.

## **Article II ADMINISTRATION**

**Section 1.** The Optometry Schools shall be under the direct administration and supervision of a duly appointed Dean who possesses the following qualifications:

- 1.1 Preferably a Doctor of Optometry with a PhD Degree (or a candidate) in Optometry, Allied Sciences, Education, Administration or Management;
- 1.2 Must have teaching experience or a faculty member in a school or college of optometry for at least five years;
- 1.3 Must display qualities of leadership and management skills;
- 1.4 Must enjoy the respect of his peers, colleagues, and the community in which he/she belongs; and
- 1.5 Must be good moral character.

## **Article III FACULTY**

**Section 1.** Each faculty shall have academic and clinical preparations appropriate to teaching assignments. For this reason, the following faculty qualifications must be developed within two years from implementation of this Policies and Standards; provided that those who have taught for more than 10 years may not comply but may not teach new subjects without appropriate qualifications;

- 1.1 GENERAL EDUCATION (GE) :** Qualifications set by CHED;
- 1.2 BASIC SCIENCES (BS):** Preferably PhD, or an MS in the sciences related to the subject;
- 1.3 MEDICAL SCIENCES (MS)**
  - 1.3.1 General Medical :** Medical Degree or equivalent PhD in the particular subject;
  - 1.3.2 Ocular Medical :** Medical Degree with Diplomate in Ophthalmology;
- 1.4 VISUAL SCIENCES (VS) :** Optometrist in good standing with the Professional Regulation Commission (PRC) and with a Master's Degree in Optometry, Clinical Optometry, Physiologic Optics or the Visual Sciences;
- 1.5 CLINICAL SCIENCES (CS):**
  - 1.5.1 Optometrist** in good standing with the Professional Regulation Commission (PRC) and DPA certified;
  - 1.5.2 General Clinical :** preferably a Fellow from a PRC or peer-recognized Academy or institution and must be in professional and ethical practice for at least two years;
  - 1.5.3 Specialty Field :** preferably a Diplomate in the specialty field from a PRC or peer-recognized Academy or institution and must be in professional and ethical practice for at least two years;

**Section 2.** In order to ensure high quality of instruction, faculty members must be given ample time to prepare and develop his new teaching materials and to continually enrich old ones. He also needs time to read scientific publications, interact with colleagues, undertake research and publish its results, attend seminars, conferences and post-graduate courses.

## **Article IV INSTRUCTIONAL STANDARDS**

**Section 1.** Institutions must strive to attain and maintain global standards in the quality of its instruction. This can be achieved through:

- 1.1 Sound and dynamic administrative policies**

- 1.2 Competent and motivated faculty
- 1.3 Updated and dynamic standard curricular contents
- 1.4 Updated and complete library, multi-media, computer and internet facilities
- 1.5 Updated and complete laboratory and clinical equipment and facilities
- 1.6 Adequate and comfortable physical facilities
- 1.7 An atmosphere of true academic freedom

Section 2. To ensure quality of instruction, the following ratio of faculty to students must be observed:

- 2.1 Lecture: 1:40
- 2.2 Laboratory: 1:15
- 2.3 Clinical: 1:10
- 2.4 Clinic/hospital/community proctorship: 1:5
- 2.5 Research Advising: 1:5

Section 3. The quality of clinical instruction is highly dependent on competent guidance from clinical instructors/proctors and hands-on real-life clinic experiences on a wide spectrum of patients, procedures, instruments and situations, when acting alone or working within a multi-specialty referral system. For this reason, the following guidelines on clinical instruction and clinical experiences is given:

- 3.1 Clinical Instruction
  - 3.1.1 Faculty qualifications should be strictly implemented
  - 3.1.2 Problem-solving approach should guide organization of facilities and procedures
  - 3.1.3 Students should be rated according to measurable clinical competencies.
- 3.2 Clinical Experiences
  - 3.2.1 All facilities and instruments are meant to be used by the students in the course of their clinical work.
  - 3.2.2 Students are expected to acquire their individual portable instruments for use in training. However, additional movable and fixed instruments should be provided by the school as listed in Article VII. For some of these, there is an ideal facility-student ratio:
    - 3.2.2.1 Consultation Room and facilities: 1:10
    - 3.2.2.2 Refraction Room and facilities : 1:10
  - 3.2.3 Institutions offering optometry program should have the following Clinical sites:
    - 3.2.3.1 Open Clinic : Clinic open to the public and operated like a model professional optometric clinic. Proper filing of patient record is done and patients return for follow-up visits.

3.2.3.2 **Affiliated Hospitals** : Hospitals who will accept student rotation in selected medical departments as well as in the different services of the ophthalmology department.

3.2.3.3 **Affiliated Health Centers or RHUs and accredited model industrial clinics, private general optometric clinics, and optometric specialty clinics.**

**Article V  
LIBRARY**

Section 1. Institutions offering Optometry Program must have its own optometry library/section which is:

- 1.1 Adequately provided with all the required textbooks and references as well as currently published books, journals and CD-Roms or equivalent, in optometry, visual sciences and related health sciences;
- 1.2 Adequately provided with computers with CD-Rom or equivalent, and Internet connections;
- 1.3 Accessible to students and open during school days.

**Article VI  
LABORATORY, CLINICAL AND OTHER FACILITIES**

Section 1. The requirements for laboratory, clinical and other facilities are listed in Appendix A of this Policies and Standards.

**Article VII  
CURRICULUM**

Section 1. The curriculum for the degree of Doctor of Optometry should satisfy the following minimum requirements:

<b>I. PRE-OPTOMETRY COURSES</b> _____	<b>97 (6)</b>
	semestral units*
 <b>A. ENGLISH &amp; LITERATURE</b> _____	<b>9</b>
English 1.....	3 (lec)
English 2 (Scientific Writing).....	3 (lec)
Literature.....	3 (lec)

<b>B. FILIPINO</b>	<b>6</b>
Filipino 1.....	3 (lec)
Filipino 2.....	3 (lec)
<b>C. MATHEMATICS</b>	<b>10</b>
Math 1 (Algebra/Trigonometry).....	4 (lec)
Math 2 (Basic Statistics).....	3 (lec)
Math 3 (Calculus).....	3 (lec)
<b>D. SOCIAL SCIENCE</b>	<b>18</b>
Logic.....	3 (lec)
Philosophy (Philosophy of Science;STS)	3 (lec)
Psychology.....	3 (lec)
History & Phil. Government.....	3 (lec)
with Constitution	
Sociology with Family Planning.....	3 (lec)
Economics, Taxation &.....	3 (lec)
Land Reform	
<b>E. BASIC SCIENCES</b>	<b>29</b>
Physics .....	5 (3 lec/2 lab)
Chemistry 1 (Gen. Chemistry).....	4 (3 lec/1lab)
Chemistry 2 (Organic Chemistry).....	4 (3 lec/1lab)
Chemistry 3 (Biochemistry).....	4 (3 lec/1lab)
Biology 1 (Zoology & Botany).....	4 (3lec/1lab)
Biology 2 (Human Anatomy and.....	5 (3lec/2lab)
Physiology	
Microbiology.....	3 (2lec/1lab)
<b>F. HEALTH SCIENCE</b>	<b>14</b>
Health Ethics.....	3 (lec)
Introduction to Optometry.....	1 (lec)
Health Care 1.....	5 (3lec/2lab)
Health Care 2.....	5 (3lec/2lab)
<b>G. COMPUTER SCIENCE</b>	<b>3 (2 lec/1lab)</b>
(Computer Literacy)	
<b>H. OTHERS</b>	<b>8 (6)</b>
Physical Education.....	8
ROTC.....	(6)

II. OPTOMETRY PROPER COURSES \_\_\_\_\_ 167  
semestral units

A. MEDICAL SCIENCE (MS) \_\_\_\_\_ 41

1. General Medical Science
  - Human Anatomy (Regional Anatomy)... 5 (3lec/2lab)
  - Histology and Embryology ..... 4 (3lec/1lab)
  - Physiology..... 4 (3lec/1lab)
  - General Pathology..... 4 (3lec/1lab)
  - Neuro-Anatomy and Physiology..... 3 (2lec/1lab)
  - General Pharmacology..... 3 (lec)
  - Medicine..... 5 (lec)
  
2. Ocular Medical Science
  - Ocular Anatomy and Physiology..... 4 (3lec/1lab)
  - Ocular Disease 1..... 3 (2lec/1lab)
  - Ocular Disease 2..... 3 (2lec/1lab)
  - Ocular Pharmacology..... 3 (2lec/1lab)

B. VISUAL SCIENCES (VS) \_\_\_\_\_ 52

- Theoretical Optics..... 7 (5lec/2lab)
- Physiological Optics..... 6 (5lec/1lab)
- Theoretical Optometry..... 3 (lec)
- Neuro-Optometry..... 3 (2lec/1lab)
- Binocular Vision 1..... 3 (lec)
- Refraction..... 3 (1lec/2lab)
- Optometric Practice 1\*\*..... 3 (1lec/2lab)
- Practical and Mechanical Optics..... 3 (2lec/1lab)
- Binocular Vision 2..... 4 (3lec/1lab)
- Pediatric Optometry..... 3 (lec)
- Optometric Practice 2\*\*..... 3 (1lec/2lab)
- Geriatric Optometry and Low Vision..... 3 (lec)
- Contact Lens..... 4 (3lec/1lab)
- Public Health and Environmental..... 2 (2lec)
- Optometry
- Applied Optics..... 2 (lec)

C. CLINICAL SCIENCE (CS) \_\_\_\_\_ 59

- Clinic and Conference 1..... 5 (3lec/2clinic)
- (Differential Diagnosis 1)
- Clinical Contact Lens..... 4 (2lec/2clinic)
- Clinical Orthoptics and Pediatrics..... 4 (3lec/1clinic)
- Clinical Geriatric Optometry and..... 3 (2lec/1clinic)
- Low Vision
- Clinical Neuro-Optometry..... 3 (2lec/1clinic)
- Clinic and Conference 2..... 5 (3lec/2clinic)
- (Differential Diagnosis 2)

Occupational and Industrial.....	2 (1lec/1clinic)
Optometry	
Ocular Prosthetics.....	1 (1lab/clinic)
Vision Training and Sports Vision.....	3 (2lec/1clinic)
Optometric Rehabilitation.....	3 (2lec/1clinic)
Clinic and Conference 3.....	6 (3lec/3clinic)
Community and Hospital.....	6 (1lec/5clinic)
Optometry 1 (Internship)****	
Community and Hospital.....	14 (clinic)
Optometry 2 (Externship)*****	

**D. RESEARCH AND SCIENTIFIC \_\_\_\_\_ 8**  
**COMMUNICATION**

Optometry Research 1.....	2 (lec)
(Research Proposal)	
Optometry Research 2.....	3 (1lec/2lab)
(Data Collection & Scientific Writing)	
Seminar 1.....	2 (lec)
(Current Trends in Visual Science)	
Seminar 2.....	1 (lec)
(Research Presentation)	

**E. LEGAL, MANAGEMENT & OTHERS \_\_\_\_\_ 7**

Optometric Ethics and Jurisprudence...	2 (lec)
Optometric Economics and.....	2 (lec)
Practice Management	
Rizal.....	3 (lec)

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\* 1 semestral unit : equivalence in hours per week:

Lecture : 1 hour  
Laboratory : 3 hours  
Clinic : 3 hours

\*\* Includes assignment/duty at the General Clinic

\*\*\*Includes actual operation of instruments on patients in the Instrument Room of the school clinic

\*\*\*\*Clinical Observation in Selected Medical Departments (for Hospital Rotation)  
Clinical Observation in Different Community Clinics (for Community Rotation)

\*\*\*\*\*Clinical Rotation in the Department of Ophthalmology (for Hospital Rotation)  
Clinical Rotation in Different Accredited General and Specialty Eye Clinics and Affiliated Centers (for Community Rotation)



Section 2. A Prototype of the Optometry Curriculum is found in Part B of this Policies and Standards.

Section 3. The Course Description and the pre-requisite(s) for each course are found in Appendix C of this Policies and Standards and are an integral part of the prescribed minimum requirements for the optometry curriculum.

### **Article VIII ADMISSION, SELECTION AND RETENTION**

Section 1. The institution shall establish its own set of admission criteria consistent with the policies and standards of the Commission on Higher Education.

### **Article IX EFFECTIVITY AND IMPLEMENTATION**

Section 1. The effectivity and implementation of the curriculum herein described shall be:

1.1 First year pre-optometry.....	SY 1998-1999
1.2 Second year pre-optometry.....	SY 1999-2000
1.3 First year optometry proper.....	SY 2000-2001
1.4 Second year optometry proper.....	SY 2001-2002
1.5 Third year optometry proper.....	SY 2002-2003
1.6 Fourth year optometry proper.....	SY 2003-2004

### **Article X SPECIAL PHARMACOLOGY COURSE**

Section 1. Pursuant to the provisions of Section 31 of Republic Act 8050, optometrists who have not taken the six-year curriculum may take a course in pharmacology to be prescribed by the Commission on Higher Education and pass a special certification examination to be administered by the Board of Optometry, if they wish to use specific diagnostic pharmaceutical agents.

Section 2. This pharmacology course may be taken in any college, university or institution offering these course, provided that the faculty member teaching the courses are qualified as described in Article VI of this Policies and Standards. Distance education in this courses, when available, may be taken, subject to the same faculty qualification as above.

Section 3. The Special Pharmacology Course shall consist of six (6) units of didactic studies, five (5) units lecture and one (1) unit laboratory, and a preceptorial course consisting of 144 hours of clinic attendance under the supervision of a Diplomate in Ophthalmology who will issue a Certificate of Attendance and Proficiency in the use of DPAs to successful trainees.

### 3.1 Course Description

3.1.1 The didactic course is designed to equip the optometrist with a working knowledge of:

3.1.1.1 the basic biochemical sciences necessary for the understanding of pharmacology and;

3.1.1.2 the basic principles of pharmacology, the action and uses of pharmacologic agents specially those used in eyecare.

3.1.2 The preceptorial course is designed to train the optometrist in the actual use of DPAs in a clinical setting.

### 3.2 End Competencies

3.2.1 At the end of the didactic course, the optometrist is expected to have an understanding of the pharmacologic properties of the pharmaceutical agents especially those used in eyecare;

3.2.2 At the end of the preceptorial training, the optometrist is expected to be competent in the use of DPAs.

Section 4. The effectivity and implementation of this Special Pharmacology Course shall be from the promulgation of this Policies and Standards up to SY 2003-2004.

**SO ORDERED.**

Pasig City, Philippines, November 7, 1997

  
**ANGEL C. ALCALA**  
Chairman

  
**MONA D. VALISNO**  
Commissioner

  
**KATE C. BOTENGAN**  
Commissioner

  
**ESTER A. GARCIA**  
Commissioner

  
Commissioner

mb/pallopto/a

## **APPENDIX A**

### **LABORATORY, CLINICAL AND OTHER FACILITIES**

1.1 The following Basic and Medical Science Facilities should be found in the school and may be shared with other colleges:

#### 1.1.1 Basic Sciences

- 1.1.1.1 Chemistry Laboratory
- 1.1.1.2 Physics Laboratory
- 1.1.1.3 Zoology and Botany Laboratory

#### 1.1.2 Medical Sciences

- 1.1.2.1 General Anatomy and Physiology Laboratory
- 1.1.2.2 Microbiology laboratory
- 1.1.2.3 Human Anatomy Laboratory ( with cadavers and models)
- 1.1.2.4 Histology and Embryology Laboratory
- 1.1.2.5 Physiology Laboratory
- 1.1.2.6 General Pathology Laboratory
- 1.1.2.7 Neuro-Anatomy and Physiology Laboratory
- 1.1.2.8 Ocular Anatomy and Physiology Laboratory

1.2 The following Visual and Clinical Sciences facilities should be found in the College of Optometry:

#### 1.2.1 Visual Sciences

##### 1.2.1.1 Theoretical Optics Laboratory

- 1.2.1.1.1 Holography Demo
- 1.2.1.1.2 Slides
- 1.2.1.1.4 Hologram Plates
- 1.2.1.1.5 Newton's Ring Apparatus
- 1.2.1.1.6 Interference Plates
- 1.2.1.1.7 Glass Plates
- 1.2.1.1.8 Optical Slides Apparatus
- 1.2.1.1.9 Electromagnetic Radiation Chart
- 1.2.1.1.10 Polarization of Light Booklet
- 1.2.1.1.11 Color Theory Slides
- 1.2.1.1.12 Newton's Color Disc
- 1.2.1.1.13 Plastic Filter Set
- 1.2.1.1.14 Spectroscope
- 1.2.1.1.15 Solar Spectrum Chart
- 1.2.1.1.16 Spectrum Chart
- 1.2.1.1.17 Hot Candle Meter
- 1.2.1.1.18 Fluorescence Demonstrator
- 1.2.1.1.19 Fluorescent Crayon
- 1.2.1.1.20 Tracing Power
- 1.2.1.1.21 Invisible Ink
- 1.2.1.1.22 Minerals

- 1.2.1.1.23 Rive Ray Box
- 1.2.1.1.24 Ray Box Optical
- 1.2.1.1.25 Plano Convex
- 1.2.1.1.26 Plano Concave
- 1.2.1.1.27 Equilateral Prism
- 1.2.1.1.28 Semi-circular Lens
- 1.2.1.1.29 Triangular Lens
- 1.2.1.1.30 Concave-convex spherical mirror
- 1.2.1.1.31 Hollow Refraction Box
- 1.2.1.1.32 Hollow Semi-circular Box
- 1.2.1.1.33 Color Filter Set
- 1.2.1.1.34 Pinhole Camera
- 1.2.1.1.35 Propagation of Light Reflection
- 1.2.1.1.36 Attachment of Earth and Moon
- 1.2.1.1.37 Lens Rider and Clamp Rider
- 1.2.1.1.38 Candle Holder
- 1.2.1.1.39 Lumirod
- 1.2.1.1.40 Fiber Optics Component Detector  
Emitter Set
- 1.2.1.1.41 Complete Optical Bench with laser  
light source
- 1.2.1.1.42 Uchida's Optical Bench
- 1.2.1.1.43 Cross Slit
- 1.2.1.1.44 Hole Turret
- 1.2.1.1.45 Frosted Screen
- 1.2.1.1.46 Photometer Box
- 1.2.1.1.47 Lens Holder
- 1.2.1.1.48 Pointer
- 1.2.1.1.49 Assorted Lenses
- 1.2.1.1.50 Mirror
- 1.2.1.1.51 Screen Stand
- 1.2.1.1.52 Slider
- 1.2.1.1.53 Mounted Film Transmission
- 1.2.1.1.54 Demonstration Diffraction Grating
- 1.2.1.1.55 Universal Light Source
- 1.2.1.1.56 Basic Polarization Kit
- 1.2.1.1.57 Polarize Disk
- 1.2.1.1.58 Mica Crystal Disk
- 1.2.1.1.59 Benzoic Acid Crystal Disk
- 1.2.1.1.60 Calcite Crystal
- 1.2.1.1.61 Circular Slide
- 1.2.1.1.62 Square Mirror
- 1.2.1.1.63 1 cm, Square Universal Light Source
- 1.2.1.1.64 1.3 x 40 cm Threaded Aluminum Rod
- 1.2.1.1.65 Set of Prisms
- 1.2.1.1.67 Measuring Stick with Metric and

## English Graduation

### 1.2.1.1.68 Others

### 1.2.1.2 Physiologic Optics Laboratory

- 1.2.1.2.1 Eye and EOM models
- 1.2.1.2.2 Model of accommodation
- 1.2.1.2.3 Color wheels and Tests
- 1.2.1.2.4 Photometer
- 1.2.1.2.5 Biophotometer
- 1.2.1.2.6 Lamp with rheostat
- 1.2.1.2.7 Others

### 1.2.1.3 Practical, Mechanical & Applied Optics Laboratory

- 1.2.1.3.1 Hand Spherical Machines
- 1.2.1.3.2 Automatic Cylinder Machines
- 1.2.1.3.3 Hand Edgers
- 1.2.1.3.4 Diamond Lens Itcher
- 1.2.1.3.5 Lens Cutting Pliers
- 1.2.1.3.6 Geneva Lens Measure
- 1.2.1.3.7 Lens Clipper
- 1.2.1.3.8 Lensmeter
- 1.2.1.3.9 Frame Warmer
- 1.2.1.3.10 Set of Optical Pliers
- 1.2.1.3.11 Set of Screw Drivers
- 1.2.1.3.12 Set of Optical Files
- 1.2.1.3.13 Lens Drill
- 1.2.1.3.14 Lens Grooving Machines
- 1.2.1.3.15 Lens Pattern Maker
- 1.2.1.3.16 Automatic Edger
- 1.2.1.3.17 Set of Spherical Laps at 0.25D steps (from 2.50 to 10.00)
- 1.2.1.3.18 Set of Cylinder Laps (Base curves 4,6 and 8) at 0.25D steps from 0.25 to 2.50 cyl.)
- 1.2.1.3.19 Bunzen Burner
- 1.2.1.3.20 Optical Grinding Components
- 1.2.1.3.21 Optical Pitch
- 1.2.1.3.22 Polishing Cloth
- 1.2.1.3.23 1 set Lap Guages
- 1.2.1.3.24 Aluminum Lens Blocks (spherical and concave)
- 1.2.1.3.25 Diamond Glass Cutter
- 1.2.1.3.26 Carborundum Sticks
- 1.2.1.3.27 Electric Burner
- 1.2.1.3.28 Grease Gun

1.2.1.3.29 Others

1.2.1.4 Contact Lens Laboratory

1.2.1.4.1 Radiuscope

1.2.1.4.2 Magnifier with Reticle

1.2.1.4.3 Diameter Gauge

1.2.1.4.4 Contact Lens Thickness Gauge

1.2.1.4.5 Contact Lens Modifying Unit with  
Accessories

1.2.1.4.5 Others

1.2.2 Clinical Sciences

1.2.2.1 General Clinic

1.2.2.1.1 Consultation rooms

1.2.2.1.1.1 VA Charts

1.2.2.1.1.2 Ophthalmoscope

1.2.2.1.1.3 Slit lamp with accessories  
including Goldmann Tonometer

1.2.2.1.2 Refraction rooms

1.2.2.1.2.1 Visual Acuity Charts

1.2.2.1.2.2 Refraction unit  
(Chair and Phoropter  
head with rod)

1.2.2.1.2.3 Trial lenses and accessories

1.2.2.1.2.4 Retinoscope and  
retinoscopic rack

1.2.2.1.2.5 Lensometer

1.2.2.1.2.6 Other accessories necessary  
for refraction

1.2.2.1.3 Instrumentation room

1.2.2.1.3.1 Tangent Screen

1.2.2.1.3.2 Goldmann Perimeter

1.2.2.1.3.3 Automated Perimeter  
(Octopus or Humphrey)

1.2.2.1.3.4 Indirect ophthalmoscope

1.2.2.1.3.5 Placido Disc

1.2.2.1.3.6 Keratometer

1.2.2.1.3.7 Exophthalmometer

1.2.2.1.3.8 Pseudo-Isochromatic  
Charts

1.2.2.1.3.9 Contrast Sensitivity Chart  
( far and near )

1.2.2.1.3.10 Schiotz tonometer

- 1.2.2.1.3.11 Automated refractometer
- 1.2.2.1.3.12 Fundus camera\*
- 1.2.2.1.3.13 Computerized video keratographer\*
- 1.2.2.1.3.14 Biometer\*
- 1.2.2.1.3.15 Examining Table
- 1.2.2.1.3.16 Amsler Grid Charts
- 1.2.2.1.3.17 Other new or updated instruments necessary for diagnosis and management of visual and eye problems

#### 1.2.2.1.4 Dispensing Room

- 1.2.2.1.4.1 Visual Acuity Charts (far and near)
- 1.2.2.1.4.2 Set of Screw Drivers
- 1.2.2.1.4.3 Set of Pliers
- 1.2.2.1.4.4 Frames and Accessories
- 1.2.2.1.4.5 Hot plate or equivalent
- 1.2.2.1.4.6 Lensometer

#### 1.2.2.1.5 Conference room

- 1.2.2.1.4.1 Projection screen
- 1.2.2.1.4.2 Overhead projector
- 1.2.2.1.4.3 Slide projector
- 1.2.2.1.4.4 TV, VHS and Video library
- 1.2.2.1.4.5 Audio facilities
- 1.2.2.1.4.6 LCD Projector\*

### 1.2.2.2 Specialty Clinics

#### 1.2.2.2.1 Cornea and Contact Lens Clinic

- 1.2.2.2.1.1 Keratometer
- 1.2.2.2.1.2 Biomicroscope
- 1.2.2.2.1.3 Ultra-Violet Lamp / Magnifier
- 1.2.2.2.1.4 Pachymeter
- 1.2.2.2.1.5 Diagnostic Lenses (Hard and Soft)
- 1.2.2.2.1.6 Flourescein Strips
- 1.2.2.2.1.7 Shirmer's Test Strips
- 1.2.2.2.1.8 Radiuscope
- 1.2.2.2.1.9 Magnifier with Reticle
- 1.2.2.2.1.10 Diameter Gauge
- 1.2.2.2.1.11 Ultrasonic Cleaner
- 1.2.2.2.1.12 Rubber Suction Cups

1.2.2.2.1.13 Dispensing Mirror and Penlight

1.2.2.2.2 Pediatric and Binocular Vision Clinic

(Room should be at least 6 meters long)

1.2.2.2.2.1 Pediatric and adult VA

charts, including OKN  
Drum ,FCPL,Cardiff

1.2.2.2.2.2 Pediatric targets and toys

1.2.2.2.2.3 Pediatric examining table  
and accessories

1.2.2.2.2.4 Stereotests ( up to 20' )

1.2.2.2.2.5 Prism bars ( bar to  
student ratio of 1:10 )  
and loose prisms

1.2.2.2.2.6 Worth-4-lights Test

1.2.2.2.2.7 Bagolini lenses

1.2.2.2.2.8 Fixation Disparity Test

1.2.2.2.2.9 Ophthalmoscope with visuscope

1.2.2.2.2.10 Major amblyoscope(optional)

1.2.2.2.2.11 Hess-Lees Screen\* or  
Hess Screen

1.2.2.2.3 Geriatric,Low Vision and Visual  
Rehabilitation Clinic

1.2.2.2.3.1 Diagnostic Equipments

1.2.2.2.3.1.1 Low Vision Acuity  
Charts (for distance

and near (in logMar notation)

1.2.2.2.3.1.2 Trial Lens Case and  
Trial Frame

1.2.2.2.3.1.3 Hand Held Jackson  
Cross Cylinder +/- 0.50  
or 1.00

1.2.2.2.3.1.4 Halberg or Janelli  
Clips

1.2.2.2.3.1.5 Transilluminator

1.2.2.2.3.1.6 Ophthalmoscope /  
Retinoscope

1.2.2.2.3.2 Functional Testing

1.2.2.2.3.2.1 Amsler Grid

1.2.2.2.3.2.2 Contrast Charts

1.2.2.2.3.2.3 Brightness and  
Potential Acuity Charts

1.2.2.2.3.2.4 Color Test

1.2.2.2.3.3 Low Vision Devices



1.2.2.2.3.3.1 Spectacles and  
Loupes : base-in prism  
spectacles in full or half  
frames from +4.00 to + 12.00  
D with appropriate prism

1.2.2.2.3.2.2 Aspheric Lenticular  
Full Frame Spectacles from  
- 10.00 to + 20.00

1.2.2.2.3.2.3 Aspheric Lenticular  
Microscopic Full or Half  
Frame Spectacles : +24  
to +32D

1.2.2.2.3.2.4 Doublets : 6x, 7x, 8x  
Headborne or Clip-on  
6D, 10D, 15D

1.2.2.2.3.2.5 Hand Magnifiers :  
Illuminated and Non-  
Illuminated: +5 to +48

1.2.2.2.3.2.6 Stand Magnifiers:  
Illuminated and Non-  
Illuminated: +3.5 to +60

1.2.2.2.3.2.7 Telescopes;  
Handheld, Clip-on,  
Spectacle Mounted: 2x to  
6x

1.2.2.2.3.2.8 Absorptive Lenses:  
Fixed and variable  
transmittance, clip-on, fit  
over, behind lens, flip-up,  
non-prescription and  
prescription.

1.2.2.2.3.2.9 Electronic Devices  
CCTV (Optional)

1.2.2.2.3.2.10 Non-Optical Devices:  
Large Print, Felt-tipped  
Pen, etc.

1.2.2.2.3.2.11 Adaptive and  
Accessory devices : lap  
desk, typoscope, amber  
filter, clamps

#### 1.2.2.2.4 Vision Training and Sports Vision Clinic

1.2.2.2.4.1 Wayne's After-Image

1.2.2.2.4.2 +/- +1.00 Flipper

1.2.2.2.4.3 BI<sup>^</sup> / BO<sup>^</sup> Flipper

1.2.2.2.4.4 Wayne's Saccadic Fixator

and accessories

- 1.2.2.2.4.5 Dynamic VA Rotator
  - 1.2.2.2.4.6 Balance Beam
  - 1.2.2.2.4.7 Peripheral Awareness Test
  - 1.2.2.2.4.8 Laser Beam
  - 1.2.2.2.4.9 Tachistoscope
  - 1.2.2.2.4.10 Strobe Light
  - 1.2.2.2.4.11 Brock's String or Electronic  
Brock's String
  - 1.2.2.2.4.12 Marsden Ball
  - 1.2.2.2.4.13 Magic Wand
  - 1.2.2.2.4.14 Wayne's Balance Board
  - 1.2.2.2.4.15 Speed Trac
  - 1.2.2.2.4.16 Tranagylyph
- 1.2.2.2.5 Occupational and Industrial Vision Clinic
- 1.2.2.2.5.1 Vision Tester
  - 1.2.2.2.5.2 Farnsworth-Munsell D15  
or 100-Hue Test
  - 1.2.2.2.5.3 Glare Tester
  - 1.2.2.2.5.4 UV Tester / Meter
  - 1.2.2.2.5.5 Light Meter
  - 1.2.2.2.5.6 Protective Eyewear / Devices  
(Goggles, Eye Shield, etc.)

1.2.2.3 Ophthalmic Clinic(Ocular Diseases Clinic)  
May utilize one Consultation room, provided  
that the slit lamp has an observation tube.

\* May initially be found in an affiliate hospital or school, but these equipment must be found within school premises later, and must be ready when the pertinent subjects are due to be taught or when clinic procedures indicate the need for the instrument(s).

## APPENDIX B

### CURRICULUM PROTOTYPE

#### PRE-OPTOMETRY

#### FIRST YEAR

#### FIRST SEMESTER

	UNITS			HRS. / WEEK	
	Total	Lec	Lab	Lec	Lab
GE English 1 (Communication Skills)	3	3	0	3	0
GE Filipino 1	3	3	0	3	0
GE Logic	3	3	0	3	0
BS Psychology	3	3	0	3	0
BS Math 1 (Algebra/Trigonometry)	4	4	0	4	0
BS Chemistry 1 (Gen. Chemistry)	4	3	1	3	3
VS Introduction to Optometry	1	1	0	1	0
GE P.E. 1	2	2	0	2	0
GE ROTC	(1.5)	(1.5)	0	(1.5)	0
<b>TOTAL</b>	<b>23</b>			<b>25</b>	

#### 2ND SEMESTER

GE English 2 (Scientific Writing)	3	3	0	3	0
GE Filipino 2	3	3	0	3	0
BS Math 2 (Basic Statistics)	3	3	0	3	0
BS Chemistry 2 (Organic Chemistry)	4	3	1	3	3
GE Philosophy	3	3	0	3	0
BS Biology 1 (Zoology and Botany)	4	3	1	3	3
GE History & Phil. Gov't. with Constitution	3	3	0	3	0
GE P.E. 2	2	2	0	2	0
GE ROTC	(1.5)	(1.5)		(1.5)	
<b>TOTAL</b>	<b>25</b>			<b>29</b>	

## SECOND YEAR

### 1ST SEMESTER

	Total	UNITS		HRS. / WEEK	
		Lec	Lab	Lec	Lab
GE Literature 1	3	3	0	3	0
BS Chemistry 3 (Biochemistry)	4	3	1	3	3
BS Biology 2 (Human Anatomy & Physiology)	5	3	2	3	6
BS Math 3 (Calculus)	3	3	0	3	0
GE Health Ethics	3	3	0	3	0
BS Health Care 1	5	3	2	3	6
GE P.E. 3	2	2	0	2	0
GE ROTC	(1.5)			(1.5)	
<b>TOTAL</b>	<b>25</b>			<b>35</b>	

### 2ND SEMESTER

BS Microbiology	3	2	1	2	3
GE Computer Science (Computer Literacy)	3	2	1	2	3
BS Physics	5	3	2	3	6
GE Sociology (with Family Planning)	3	3	0	3	0
GE Economics, Taxation and Land Reform	3	3	0	3	0
BS Health Care 2	5	3	2	3	6
GE P.E. 4	2	2	0	2	0
GE ROTC	(1.5)			(1.5)	
<b>TOTAL</b>	<b>24</b>			<b>36</b>	

## **OPTOMETRY PROPER**

### **FIRST YEAR OP**

#### **1ST SEMESTER**

	<b>UNITS</b>			<b>HRS. / WEEK</b>	
	Total	Lec	Lab	Lec	Lab
MS Human Anatomy (Regional Anatomy)	5	3	2	3	6
MS Histology and Embryology	4	3	1	3	3
MS Physiology	4	3	1	3	3
BS Theoretical Optics	7	5	2	5	6
GE Rizal	3	3	0	3	0
<b>TOTAL</b>	<b>23</b>			<b>35</b>	

#### **2ND SEMESTER**

MS General Pathology	4	3	1	3	3
MS Ocular Anatomy and Physiology	4	3	1	3	3
VS Physiological Optics	6	5	1	5	3
MS Neuro-Anatomy and Physiology	3	2	1	2	3
MS General Pharmacology	3	3	0	3	0
VS Theoretical Optometry	3	3	0	3	0
<b>TOTAL</b>	<b>23</b>			<b>31</b>	

## SECOND YEAR OP

### 1ST SEMESTER

	Total	UNITS		HRS. / WEEK	
		Lec	Lab	Lec	Lab
MS Ocular Disease 1	3	2	1	2	3
MS Ocular Pharmacology	3	2	1	2	3
VS Neuro-Optometry	3	2	1	2	3
VS Binocular Vision 1	3	3	0	3	0
VS Refraction	3	1	2	1	6
VS Optometric Practice 1	3	1	2	1	6
VS Practical and Mechanical Optics	3	2	1	2	3
TOTAL		21		37	

### 2ND SEMESTER

MS Ocular Disease 2	3	2	1	2	3
VS Binocular Vision 2	4	3	1	3	3
VS Pediatric Optometry	3	3	0	3	0
VS Optometric Practice 2	3	1	2	1	6
VS Geriatric Optometry and Low Vision	3	3	0	3	0
VS Contact Lens	4	3	1	3	3
VS Applied Optics	2	2	0	2	0
TOTAL		22		32	

**THIRD YEAR OP****1ST SEMESTER**

	Total	UNITS			HRS. / WEEK		
		Lec	Lab	Clinic	Lec	Lab	Clinic
CS Clinic and Conference 1 (Differential Diagnosis 1)	5	3	0	2	3	0	6
CS Clinical Contact Lens	4	2	0	2	2	0	6
CS Clinical Orthoptics and Pediatrics	4	3	0	1	3	0	3
CS Clinical Geriatric Optometry and Low Vision	3	2	0	1	2	0	3
CS Clinical Neuro-Optometry	3	2	0	1	2	0	3
VS Public Health and Environmental Optometry	2	2	0	0	2	0	0
<b>TOTAL</b>	<b>21</b>				<b>35</b>		

**2ND SEMESTER**

CS Clinic and Conference 2 (Differential Diagnosis 2)	5	3	0	2	3	0	6
CS Occupational and Industrial Optometry	2	1	0	1	1	0	3
LM Optometric Ethics and Jurisprudence	2	2	0	0	2	0	0
CS Ocular Prosthetics	1	0	1	0	0	3	0
CS Vision Training and Sports Vision	3	2	0	1	3	0	3
CS Optometric Rehabilitation	3	2	0	1	2	0	3
LM Optometric Economics and Practice Management	2	2	0	0	2	0	0
BS Optometry Research 1 (Research Proposal)	2	2	0	0	2	0	0
<b>TOTAL</b>	<b>20</b>				<b>33</b>		

**SUMMER :**

BS Optometry Research 2 (Data Collection & Scientific Writing)	3	1	2	0	3	6	0
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## FOURTH YEAR OP

### 1ST SEMESTER - INTERNSHIP

	Total	UNITS			HRS. / WEEK		
		Lec	Lab	Clinic	Lec	Lab	Clinic
CS Clinic and Conference 3	6	3	0	3	3	0	9
BS Seminar 1 (Current Trends in Visual Science)	2	2	0	0	2	0	0
CS Community & Hospital Optometry 1	6	1	0	5	1	0	15
BS Seminar 2 (Research Presentation)	1	1	0	0	1	0	0
MS Medicine	5	5	0	0	5	0	0
<b>TOTAL</b>	<b>20</b>				<b>36</b>		

### 2ND SEMESTER - EXTERNSHIP

CS Community and Hospital Optometry 2	14				42		
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# **APPENDIX C**

## **COURSE DESCRIPTION**

### **Six-Year Course Leading to the Degree Doctor of Optometry**

#### **PRE-OPTOMETRY**

#### **FIRST YEAR**

#### **FIRST SEMESTER**

##### **ENGLISH 1 (3 units lec)**

(Communication Skills) This course is a reinforcement of the communication skills learned in the elementary and high school. This makes use of the integrated two-strand approach in grammar (Form and Function) and the thematic arrangement in its hope to strengthen the students' speaking, listening, reading and writing skills in English.

##### **FILIPINO 1 (3 units lec)**

(Sining ng Pakikipagtalastasan) Pag-aaralan ang Filipino bilang isang wika dinamiko na gagamitin sa komunikasyong pasalita at pasulat. Lilinangin ang apat na makrong kasanayan sa pakikinig, pagsasalita, pagbasa at pagsulat sa pamamagitan ng iba't-ibang texto at konteksto.

##### **LOGIC (3 units lec)**

(Critical Thinking) An introduction to the recognition, analysis and evaluation of argument and argumentation. Formal and non-formal techniques are investigated as well as both didactic and inductive modes of reasoning.

##### **PSYCHOLOGY (3 units lec)**

(General and Applied Psychology) This course deals with the study of the human organism, his psycho-biological development, his psycho-physical equipment and modes of adjustment to conflicts and frustrations. Human heredity, the nature of personality, sensation, perception, the socialization process, learning process and individual differences are also studied. Attention also is given to man's emotions and motivations and his acquisition and development of attitudes.

### **MATHEMATICS 1 ( 4 units lec)**

(Algebra / Trigonometry) For Algebra, this course deals with the fundamental algebraic concepts and operations; linear equation; functional concepts and graph; variation; exponents and radicals; complex numbers; binomial theorems; quadratic equations; progressions. For Trigonometry, this course deals with the theory of equations; conic and trigonometric functions, solution of right triangles, graph of trigonometric functions, logarithms, fundamental identities; angles and arc measures; inverse trigonometric functions and oblique triangles.

### **CHEMISTRY 1 (4 units; 3 lec/ 1 lab)**

(General Chemistry) This course deals with the fundamental concepts and principles of chemistry, blending fact with the theory in application, particularly to the various fields of students' interest and generally to the physical world. Emphasis is given to the correlation of the present concepts of atomic composition and structure with the physical and chemical properties of elements and compounds.

### **INTRODUCTION TO OPTOMETRY (1 unit lec)**

This course deals with the study of the basic principles in Optometric practice, its history and development. It also deals with the basic concepts in Primary Care Optometry.

## **SECOND SEMESTER**

### **ENGLISH 2 ( 3 units lec)**

(Scientific Writing) This course is designed to develop basic research and writing skills of students in their specific discipline.

PR: English 1 ( Communication Skills)

### **FILIPINO 2 (3 units lec)**

(Pagbasa at Pagsulat sa Iba't-ibang Disiplina) Ang kursong ito ay magbibigay-pokus sa pagbasa at pagsulat bilang kasangkapan sa pagkatuto. Ituturo sa kursong ito ang mga stratehiya sa pagbasa ng iba't-ibang genre ng mga textong nakasulat. Lilinangin din ang mga kasanayan sa pag-unawa lalo na ang kritikal na pag-unawa, gayundin ang kasanayan sa pagsulat ng iba't-ibang sulating akademiko. Magiging batayang paksa ang ukol sa humanidades at agham panlipunan, agham at teknolohiya.

PR: Filipino 1

phasize non-maleficence, respect of person, justice and solidarity.

## **MATHEMATICS 2 (3 units lec)**

(Basic Statistics) This course deals with the basic statistical concepts involved in data collecting, summarizing, presenting and interpreting, and use of these data to test hypothesis in health science research.

PR: Mathematics 1 (Algebra/Trigonometry)

## **CHEMISTRY 2 (4 units; 3 lec/ 1 lab)**

(Organic Chemistry) This course deals with the study of organic substances, with emphasis on relating their structures with corresponding functions.

PR: Chemistry 1 (General Chemistry)

## **PHILOSOPHY( 3 units lec)**

(Philosophy of Science; Science, Technology and Society) This course deals with the study of the general concepts in philosophy with emphasis on the philosophy of science. It will also include an investigation of issues and concepts within science and about science, including such topics as the nature of explanation, the nature of confirmation, the nature of scientific progress, the relationship among science, technology, values and society.

PR: Logic

## **BIOLOGY 1 (4 units; 3 lec/ 1 lab)**

(Zoology and Botany)

## **HEALTH ETHICS ( 3 units lec)**

This course aims at developing an understanding of the important concepts and principles of Bio-ethics. At the end of the course, the student should be sensitive to ethical considerations as he/she faces ethical issues in health care and community work. Content will emphasize non-maleficence, respect of person, justice and solidarity.

## **HISTORY (3 units lec)**

(History & Philippine Government with Constitution)

**SECOND YEAR**  
**FIRST SEMESTER**

**LITERATURE (3 units lec)**

(General and Philippine Literature) The study of literature by examining fiction, poetry, and essay from various periods and countries with emphasis on the Philippines. It will also include study of important ideas and problems as they are reflected in the literature.

**CHEMISTRY 3 (4 units; 3 lec/1 lab)**

(Biochemistry) This course deals with the basic biochemical sciences necessary for the understanding of Pharmacology. It deals with the biochemical events occurring in the cell as they relate to physiological process occurring in animals.

PR: Chemistry 2 ( Organic Chemistry)

**BIOLOGY 2 (5 units; 3 lec/2 lab)**

( Human Anatomy and Physiology) This course deals with the study of the human body through models. Anatomy will be discussed alongside physiology with emphasis on correlation between structure and function. To best accomplish this, study by system will be adopted.

PR: Biology 1 ( Zoology and Botany)

**MATHEMATICS 3 ( 3 units lec)**

(Calculus) This course deals with the study of functions, limits and continuity, differentiation, the Mean-Value Theorem and its application, integration, and some application of the integral.

PR: Math 1 (Algebra and Trigonometry)

**HEALTH CARE 1 (5 units ; 3 lec/2 lab)**

This course deals with the concepts and principles in the provisions of basic health care in terms of health promotion, maintenance and disease prevention of the individual.

principles of Philippine taxation and land reform.

### **HEALTH CARE 2 ( 5 units; 3 lec/2 lab)**

This course deals with the concepts and principles used in the provision of basic health care in terms of health promotion, maintenance and disease prevention at the community level.

PR: Health Care 1

## **OPTOMETRY PROPER**

### **First Year**

#### **First Semester**

### **HUMAN ANATOMY (5units; 3 lec/2lab)**

This course deals with the study of the human body by region with emphasis on the structure of the head and neck as they relate to the structure of the eye and their clinical correlations using preserved cadavers. At the end of the course, the student should be able to scientifically identify the vital parts of the human body and understand the relationships among the structures of the head and neck and the various systems, principally the cerebro-vascular and nervous systems, in relation to the eye.

PR: Biology 2 (Human Anatomy and Physiology)

### **HISTOLOGY AND EMBRYOLOGY (4 units;3 lec/1lab)**

This course deals with the study of the microscopic structure of the normal cell and the primary tissue, and the cytoarchitecture of the adult organs with histogenesis using prepared slides with special emphasis on the tissues found in the eye.

PR: Biology 2 (Human Anatomy and Physiology)

### **PHYSIOLOGY (4 units;3lec/1lab)**

This course deals with the basic principles of human physiology with emphasis on the elementary functions of the head, neck, cerebro-vascular, and nervous systems as they relate to ocular functions.

PR: Biology 2 (Human Anatomy and Physiology)

### **THEORETICAL OPTICS (7 units; 5 lec/2lab)**

This course deals with the study of the nature, propagation and behaviour of light and the different phenomena related to it. The topics include fundamental aspects of physical and geometric optics. This course is also intended to provide an essential background in Photometry.

PR: Physics

### **RIZAL (3 units lec)**

This course deals with the life and works of Dr. Jose Rizal.

## **SECOND SEMESTER**

### **GENERAL PATHOLOGY (4 units; 3 lec/1 lab)**

This course deals with clinical correlation between the signs and symptoms of disease states and alteration in the normal structure of cells, tissues, organs and systems. At the end of the course, the student should be able to differentiate normalcy from an abnormality in the body.

PR: Human Anatomy (Regional Anatomy), Histology and Embryology, Physiology

### **OCULAR ANATOMY AND PHYSIOLOGY ( 4 units; 3 lec/1 lab)**

This course deals with the study of the gross structures and histologic layers of the different parts of the human eye. This also includes the study of its function, the inter-relationship of the intra-ocular tissues or structures and the correlation of each part or function in clinical application. At the end of the course, the student should be able to discuss the normal state of the anatomy and physiology of the different parts of the eye and integrate the relationships between them.

PR: Human Anatomy (Regional Anatomy), Histology and Embryology, Physiology

### **PHYSIOLOGICAL OPTICS (6 units; 5lec/1lab)**

This course deals with the study of the processing of visual stimuli by the human eye with emphasis on the application of optics to the refractive media of the eye. It also includes ac-

accommodation and amplitude, physiologic defects of the eye as well as mechanism for pupil constriction and dilation. The nerve impulse and its propagation relevant to the creation of visual sensation and perception are given importance. The photochemistry and electrical phenomena, retinal mosaic, flicker, color mixing and the importance of stereopsis in binocular vision are also included. Review on the anatomy of the eye and the nervous system is necessary in understanding the subject matter.

PR: Theoretical Optics, Physiology  
CR: Ocular Anatomy and Physiology

### **NEURO-ANATOMY AND PHYSIOLOGY (3 units; 2 lec/ 1 lab)**

This course deals with the study of the nervous system, form and function of the spinal cord and spine, anatomy of the brain, functional integration of the entire nervous system and the use of neuro-diagnostic aids. At the end of the course, the student should be able to discuss cases and identify neurological conditions with the signs and symptoms presented, pinpoint location of the lesion and recommend appropriate neuro-diagnostic procedures.

PR: Human Anatomy (Regional Anatomy), Physiology

### **GENERAL PHARMACOLOGY ( 3 units lec)**

This course deals with the study of the basic principles of pharmacology, general classification of drugs with emphasis on the autonomic drugs, cardiovascular drugs and chemotherapeutics. The course is designed to help the optometry student understand the action and uses of pharmacologic agents, thus equipping him to become a health care provider in the community.

PR: Chemistry 3 (Biochemistry), Human Anatomy (Regional Anatomy), Physiology

### **THEORETICAL OPTOMETRY (3 units lec)**

This course deals with the study of the nature, theories, causes, symptoms, distributions and prognosis of the different refractive status of the eye with application of contemporary research in physiological optics and clinical optometry; accommodative and convergence relationships, subnormal vision, asthenopia and headaches. This course prepares the students for direct patient care services, the diagnosis and correction of all types of refractive error and other anomalies of the eye, and the study of the art of patient management.

CONCURRENT (CR): Ocular Anatomy and Physiology, Physiological Optics

## **SECOND YEAR**

### **FIRST SEMESTER**

#### **OCULAR DISEASE 1 AND 2 (3 units; 2 lec/ 1 lab)**

This course deals with the study of the different pathologic conditions affecting the eye and its ocular adnexa.

PR: Ocular Disease 1- General Pathology  
Ocular Disease 2- General Disease 1

#### **OCULAR PHARMACOLOGY(3 units; 2 lec/ 1 lab)**

This course is designed to help the optometry student understand the mechanisms of action of the various pharmacologic agents in eye care which may be diagnostic, therapeutic and surgical adjuncts in nature. The ability to use diagnostic pharmaceutical agents (DPA's) competently and to understand the use of therapeutic pharmaceutical agents (TPAs) are the main features of this course. This should equip and prepare the student to assume his role as a primary eyecare provider. .

PR: General Pharmacology, Ocular Anatomy and Physiology

#### **NEURO-OPTOMETRY (3 units; 2 lec/ 1 lab)**

This course deals with the problems affecting the visual, pupillary reflex, and the efferent visual pathways. Perimetry, electrophysiology of the eye, and other neuro-ophthalmologic procedures are also discussed. At the end of the course, the student should be able to order or perform certain diagnostic procedures, interpret the results, and understand the clinical correlations.

PR: Neuro-anatomy and Physiology

#### **BINOCULAR VISION 1 (3 units lec)**

This course deals with the basic concepts and theories of binocular vision and the study of the eye as a sensorimotor unit. The sensory aspect of binocular vision is discussed with emphasis on the various factors that provide obstacles to binocular vision. The motor aspect is studied with emphasis on the anatomy and physiology of EOM movements.

PR: Ocular Anatomy and Physiology, Physiologic Optics  
CR: Neuro-anatomy and Physiology



### **REFRACTION (3 units; 1 lec/ 2 lab)**

The course deals with the theories, principles and procedures of objective and subjective refraction techniques. Objective refraction techniques include static and dynamic retinoscopy, and cycloplegic, pediatric and low vision refraction. A short discussion on automated refraction is included. Subjective procedures include the monocular, binocular and near subjective routines as well as determination of presbyopic addition.

PR: Theoretical Optometry

### **OPTOMETRIC PRACTICE 1 (3units; 1 lec/ 2 lab)**

The course is an introduction to and provides the basic framework for the clinical routine in an optometric practice. The student learns case history taking, external eye assessment, preliminary tests, visual acuity tests and other tests which belong to the diagnostic armament of an optometrist in an expanded-scope practice. Preliminary tests include pupillary distance measurement, the determination of the dominant eye, ocular motility tests and binocular vision tests. The course also includes special procedures like color vision, visual field and subjective neurodiagnostic tests. In every procedure, the significance of the test and the interpretation of the findings should be emphasized. The laboratory part includes assignment/duty at the general clinic in order to familiarize the students with the tests vis-a-vis the clinical environment.

PR: Theretical Optometry

CR: Refraction

### **PRACTICAL AND MECHANICAL OPTICS (3 units; 2 lec/ 1 lab)**

This course is intended to give the students an understanding of the principles of ophthalmic lenses, prisms and instruments. Likewise, it provides extensive hands-on training on lens neutralization, frame adjustment and mechanical procedures such as benchwork, edging and lens surfacing.

PR: Theoretical Optics

## **SECOND SEMESTER**

### **BINOCULAR VISION 2 (4 units; 3 lec/ 1 lab)**

This course deals with the study of the different anomalies of binocular vision. The mechanisms, etiologies, signs and symptoms, differential diagnoses and modes of management are discussed for each anomaly.

PR: Binocular Vision 1

CR: Pediatric Optometry

### **PEDIATRIC OPTOMETRY (3 units lec)**

This course deals with the characteristics of the pediatric eye population, the growth and development of the eye, the general diagnosis and management of pediatric eye disorders, and special concerns like vision screening, pediatric low vision and visual dyslexia.

PR: Binocular Vision 1  
CR: Binocular Vision 2

### **OPTOMETRIC PRACTICE 2 (3 units; 1 lec/ 2 lab)**

This course deals with the use of objective and non-objective instruments used in ocular examination. These include the ophthalmometer, ophthalmoscope, slit lamp biomicroscope, tonometer, fundus camera and others. The use of electrodiagnostic instruments such as electroretinogram, electrooculogram, VEP and others are also included. Proper techniques in using these instruments and evaluation of findings are emphasized in every procedure. The laboratory includes actual operation of instruments on patients in the instrument room of the school clinic.

PR: Optometric Practice 1

### **GERIATRIC OPTOMETRY AND LOW VISION (3 units lec)**

This course aims to familiarize the students with the basic concepts of geriatrics and geriatrics and the role of the optometrist in maintaining the independent lifestyles of this special population. The course also deals with the study of the classification of low vision and blindness, the effects of eye disorders on visual functions, magnifications and optics of low vision lenses and devices as well as the importance of light, glare and contrast in low vision care.

PR: Ocular Anatomy and Histology, Physiological Optics, Practical and Mechanical Optics,  
CR: Pediatric Optometry

### **CONTACT LENS (4 units; 3 lec/ 1 lab)**

This course deals with the study of the current concepts in anatomy and physiology of the cornea; the tear film, microbiology and immunology in relation to contact lens wear. The following are also discussed: new developments in contact lens materials, designs, lens care systems, optics and fitting of contact lens in relation to optics of the eye, corneal topography and eyelid characteristics; lens manufacturing techniques, patient screening, predictive testing and advanced lens fitting techniques; managing therapeutics and post-surgical cases; contact lens interactions with medications and environmental agents; special applications of contact lenses in research and industry, refractive surgery, orthokeratology and alternative forms of vision correction; advanced study of contact lens research methods and analysis of contact lens literature and databases.

PR: Ocular Disease 1, Ocular Pharmacology, Practical and Mechanical Optics.  
CR: Ocular Disease 2

### **APPLIED OPTICS (2 units lec)**

The course deals with the application of optics in the design of lenses, prisms and clinical instruments.

PR: Practical and Mechanical Optics

## **THIRD YEAR**

### **FIRST SEMESTER**

#### **CLINIC AND CONFERENCE 1,2, AND 3 (5 units; 3 lec/ 2 clinic)**

The Clinic portion of this course involves intensive training on the various aspects of optometric practice utilizing the problem solving approach. Routine and special ocular tests are performed on patients in the clinic setting and the findings are analyzed and evaluated to come up with a sound diagnosis and management. Follow-up of patients are done as in real life clinical situation. The Conference portions deals with the differential diagnoses of non-pathological (1) and pathological cases (2). Cases in the clinic which pose as challenge to the clinicians' analytical and diagnostic capabilities shall be presented during conference to come up with a sound diagnosis and management plan.

PR: Clinic and Conference 1: Optometric Practice 2, Ocular Disease 2, Binocular Vision 2,  
Pediatric Optometry, Geriatric Optometry and Low Vision,  
Contact Lens

Clinic and Conference 2: Clinic and Conference 1

Clinic and Conference 3: Clinic and Conference 2

#### **CLINICAL CONTACT LENS (4 units; 2 lec/ 2 clinic)**

This course deals with the actual patient fitting and aftercare, clinical comparison of contact lens and care system products, verification and modification of lenses in practice, lens fitting for sports vision, cosmesis, vocational needs, keratoconus and other specialty cases.

PR: Contact Lens

CR: Conference 1

### **CLINICAL ORTHOPTICS AND PEDIATRICS (4 units; 3 lec/ 1 clinic)**

This course deals with the clinical assessment of pediatric and squint patients and the diagnosis and management of their ocular anomalies.

PR: Pediatric Optometry, Binocular Vision 2  
CR: Clinic and Conference 1

### **CLINICAL GERIATRIC OPTOMETRY AND LOW VISION (3 units; 2 lec/ 1 clinic)**

This course deals with the clinical application of diagnostic procedures in low vision and the clinical assessment and management of low vision cases. The interdisciplinary approach to the rehabilitation of the partially sighted will be emphasized.

PR: Geriatric Optometry and Low Vision, Ocular Disease 2, Neuro-optometry  
CR: Clinic and Conference 1

### **CLINICAL NEURO-OPTOMETRY (3 units; 2 lec/ 1 clinic)**

This course deals with the clinical assessment, diagnosis and management of the different oculo-neurologic problems with emphasis on the visual sensory and motor-sensory disorders. The diagnosis and optometric management of neurological disorders with ocular manifestation shall be emphasized in case discussions.

PR: Neuro-optometry  
CR: Clinic and Conference 1

### **PUBLIC HEALTH AND ENVIRONMENTAL OPTOMETRY (2 units lec)**

This course deals with the study of the relationship between the human being and his environment with emphasis on optometric concerns. It also deals with the promotion and preservation of ocular health and safety in the home, community and the workplace. This course provides the theoretical background for occupational and industrial optometry.

PR: Health care 2

## **SECOND SEMESTER**

### **OCCUPATIONAL AND INDUSTRIAL OPTOMETRY ( 2 units; 1 lec/ 1 clinic)**

This course deals with the study of concepts in occupational and industrial vision. Vision screening methods, occupational eye examination, vision standards and eye safety aspects of the workplace, visual demand of different occupations and work prescriptions are also discussed

and demonstrated in the clinic.

PR: Public Health and Environmental Optometry  
CR: Clinic and Conference 1

### **OPTOMETRIC ETHICS AND JURISPRUDENCE (2 units lec)**

This course deals with the study of the fundamental principles of law, the Regulatory Laws, licensure, regulatory bodies of optometry, the Practice of Optometry ( RA 8050 ), optometrist-patient relationship, rights of optometrist, rights of patients, and liabilities of the optometrists, and optometric code of ethics. At the end of the course, the student must have completely understood his legal responsibilities in the conduct of optometric practice, his rights and liabilities and the boundaries between ethical and unethical optometric practice.

### **OCULAR PROSTHETICS (1 unit lab/clinic)**

The course is designed to enable students to learn the fitting procedures and manufacturing of ocular prosthesis using different materials and techniques. Actual prosthetic fitting is done in the clinic.

PR: Ocular Disease 2, Clinic and Conference 1

### **VISION TRAINING AND SPORTS VISION ( 3 units; 2 lec/ 1 clinic)**

The course is designed to provide basic and advanced vision training knowledge to comprehend visual performance. It also aims to provide knowledge and skills needed to enhance visual performance in athletics and to design customized sports vision training programs for athletes.

PR: Clinical Orthoptics and Pediatrics  
Clinic and Conference 1

### **OPTOMETRIC REHABILITATION (3 units; 2 lec/ 1 clinic)**

The course deals with the historical background, principles, symptomatology , and psychological bases of optometric rehabilitation. The assessment of patients requiring ocular and visual rehabilitation and the different therapeutic approaches are also discussed. Emphasis is made on the clinical rehabilitative management of impaired visual function due to ocular or neurological disease and trauma and minimizing its effects on the over-all function of the individual, thus minimizing the patients' frustration, improving their quality of life and helping them regain a measure of independence.

PR: Geriatric Optometry and Low Vision, Clinical Neuro-Optometry, Clinical Orthoptics and

**OPTOMETRIC ECONOMICS AND PRACTICE MANAGEMENT (2 units lec)**

The course is designed to enable the students to maintain, operate and manage an optometric practice within the larger context of his economic environment. Elements of practice management, namely; patient services and marketing, management of human and physical resources, and office management are also discussed.

PR: Economics, Taxation and Land Reform

**OPTOMETRY RESEARCH 1 ( RESEARCH PROPOSAL) (2 units lec)**

This course aims to equip the students with knowledge and skills which shall enable them to prepare research proposals in Optometry.

PR: English 2 (Scientific Writing), Computer Science (Computer Literacy)

**OPTOMETRY RESEARCH 2 (DATA COLLECTION AND SCIENTIFIC WRITING)  
(3 units; 1 lec/2 lab)**

This course aims to equip the students with knowledge and skills needed for data collection and writing of the scientific paper.

PR: Optometry Research 1

**FOURTH YEAR**

**FIRST SEMESTER**

**SEMINAR 1 ( CURRENT TRENDS IN VISUAL SCIENCE) (2 units lec)**

This course aims to develop in the student the understanding and appreciation of current scientific literature and the ability to analyze and react to current development and issues in the visual sciences.

PR: Clinic and Conference 2

**SEMINAR 2 ( RESEARCH PRESENTATION) ( 1 unit lec)**

This course aims to develop in the students the competence to present original scientific findings in a public forum.

PR: Optometry Research 2

### **HOSPITAL AND COMMUNITY OPTOMETRY 1 - INTERNSHIP(6 units; 3 lec/ 3 clinic)**

This course aims to provide broad clinical exposure to students not only in the school optometric clinic but in real life setting as well. This includes rotation in the community health centers with the application of public health principles and methods; rotation in accredited model private clinics of professional practitioners and well-equipped industrial clinics. Moreover, there will also be rotations in selected departments of affiliated hospitals, specifically; Trauma (ER), Ophthalmology, ENT, Internal Medicine -- Neurology, Cardiology, Endocrinology --- and Radiology. Examination and evaluation by proctors shall be done at the end of the course.

PR: Clinic and Conference 2

CR: Medicine

### **MEDICINE (5 units lec)**

This course deals with the study of general medicine and how common systemic diseases affect or are manifested in the eye. This provides the knowledge needed to guide the students as they observe in various medical departments in the hospital under Community and Hospital Optometry 1. This course is best taught by a Team of medical doctors.

CR: Ocular Disease 2, Community and Hospital Optometry 1

## **SECOND SEMESTER**

### **COMMUNITY AND HOSPITAL OPTOMETRY 2 - EXTERNSHIP (14 units )**

This course aims to provide clinical exposure in specific areas of eye care. For hospital rotation, assignments shall be in the various services of the Ophthalmology department like Retina, Anterior Segment, Glaucoma, etc. For community rotation, rotation shall be in various specialty clinics in Optometry, namely; Cornea and Contact Lens, Pediatric and Binocular Vision, Low Vision, Sports Vision and Occupational and Industrial Optometry. Examination and evaluation by proctors shall be done at the end of the course.

PR: Internship

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**Note :** PR - Pre-requisites  
CR - Concurrent- requisites