

**B.Voc (Optometry Technology)**  
**B.Voc(OPT)**  
**Year -1 Diploma**

<b>I Semester</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Subject</b>	<b>Content Type</b>	<b>Credit</b>
1	BVOPT-101	General Human Anatomy & Physiology	General	4
2	BVOPT-102	General Biochemistry	Skill	4
3	BVOPT-103	Geometrical Optics-I	Skill	4
4	BVOPT-104	Medical Ethics and Patients Care	General	3
5	BVOPT-105	Fundamental of Computers	General	3
6	BVOPT-106	General English and soft skill	General	2
7	BVOPTP-101	General Human Anatomy & Physiology Lab	Skill	2
8	BVOPTP-102	General Biochemistry Lab	Skill	2
9	BVOPTP-103	Geometrical Optics-I Lab	Skill	2
10	BVOPTP-104	Medical Ethics and Patients Care Lab	Skill	2
11	BVOPTP-105	Fundamental of Computers Lab	Skill	2
<b>Total</b>				<b>30</b>

<b>II Semester</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Subject</b>	<b>Type of Course</b>	<b>Credits</b>
1	BVOPT-201	Ocular Anatomy and physiology	Gen	4
2	BVOPT-202	Physical optics	Skill	4
3	BVOPT-203	Geometrical optics II	Skill	4
4	BVOPT-204	Optometric Optics –I	Skill	2
5	BVOPT-205	Orientation in para clinic science	General	3
6	BVOPT-206	Basics of Health Market & Economy	General	3
7	BVOPTP-201	Ocular Anatomy and physiology Lab	Skill	2
8	BVOPTP-202	Physical optics Lab	Skill	2
9	BVOPTP-203	Geometrical optics II Lab	Skill	2
10	BVOPTP-204	Optometric Optics –I Lab	Skill	2
11	BVOPTP-205	Orientation in para clinic science Lab	Skill	2
		Internship in Hospital		
<b>Total</b>				<b>30</b>

**B.voc Optometry technology**  
**B.Voc (OPT)**  
**Year -2 Advance Diploma**

<b>III Semester</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Subject</b>	<b>Type of Course</b>	<b>Credits</b>
1	BVOPT-301	General and ocular microbiology	Gen	4
2	BVOPT-302	Visual Optics- I	Skill	3
3	BVOPT-303	Optometric Optics – II	Skill	4
4	BVOPT-304	Optometric Instruments	Skill	3
5	BVOPT-305	Advance Computing skills	Gen	2
6	BVOPT-306	Human Values & Professional Ethics	Gen	4
7	BVOPTP-301	General and ocular microbiology Lab	Skill	2
8	BVOPTP-302	Visual Optics- I Lab	Skill	2
9	BVOPTP-303	Optometric Optics – II Lab	Skill	2
10	BVOPTP-304	Optometric Instruments Lab	Skill	2
11	BVOPTP-305	Advance Computing skills Lab	Skill	2
<b>Total</b>				<b>30</b>

<b>IV Semester</b>				
<b>S.No.</b>	<b>Course Code</b>	<b>Subject</b>	<b>Type of Course</b>	<b>Credits</b>
1	BVOPT-401	Systemic Disease, Ocular Diseases,	Gen	4
2	BVOPT-402	Clinical Examination Of Visual System	Skill	4
3	BVOPT-403	Visual Optics- II & Dispensing Optics	Skill	4
4	BVOPT-404	Basic And Ocular Pharmacology	Gen	3
5	BVOPT-405	Health and fitness	Gen	3
6	BVOPT-406	Advance communication and soft skill	Gen	2
7	BVOPTP-401	Systemic Disease, Ocular Diseases Lab	Skill	2
8	BVOPTP-402	Clinical Examination Of Visual System Lab	Skill	2
9	BVOPTP-403	Visual Optics- II & Dispensing Optics Lab	Skill	2
10	BVOPTP-404	Basic And Ocular Pharmacology Lab	Skill	2
11	BVOPTP-405	Health and fitness Lab	Skill	2
		Internship in Hospital		
<b>Total</b>				<b>30</b>

**B.voc Optometry Technology**  
**B.Voc (OPT)**  
**Year -3 B.Voc Degree**

V Semester				
S.No.	Course Code	Subject	Type of Course	Credits
1	BVOPT-501	Contact Lens-1	Skill	3
2	BVOPT-502	Low Vision Care	Skill	3
3	BVOPT-503	Geriatric Optometry & Paediatric Optometry	Gen	4
4	BVOPT-504	Binocular Vision	Skill	3
5	BVOPT-505	Digital literacy and account literacy	Gen	4
6	BVOPT-506	Introduction to national healthcare system	Gen	3
7	BVOPTP-501	Contact Lens-1Lab	Skill	2
8	BVOPTP-502	Low Vision Care Lab	Skill	2
9	BVOPTP-503	Geriatric Optometry & Paediatric Optometry Lab	Skill	2
10	BVOPTP-504	Binocular Vision Lab	Skill	2
11	BVOPTP-505	Digital literacy and account literacy Lab	Skill	2
<b>Total</b>				<b>30</b>

VI Semester				
S.No.	Course Code	Subject	Type of Course	Credits
1	BVOPT-601	Contact Lens – II	Gen	4
2	BVOPT-602	Occupational Optometry	Gen	4
3	BVOPTP-601	Contact Lens – II Lab	Skill	2
4	BVOPTP-602	Occupational Optometry Lab	Skill	2
5	BVOPTP-603	Internship in hospital	Skill	8
6	BVOPTP-604	Project Work in Hospital	Skill	10
<b>Total</b>				<b>30</b>

## **BVOPT -101 General Human Anatomy & Physiology**

### **Unit -1**

Terminology and General Plan of the Body, Body Parts and Areas, Terms of Location and Position, Body Cavities and Their Membranes, Dorsal cavity, Ventral cavity, Planes and Sections, Cells: Structure, function and location, Prokaryotic and eukaryotic cells, Cell organelles, Cell division.

### **UNIT-2**

Tissue, Types, Structure, Location and Function of Epithelial Tissue, Connective Tissue, Muscle Tissue, Nerve Tissue, Membranes, Glandular tissue The Integumentary System: structure and function of The Skin, Subcutaneous Tissue, Musculoskeletal System: Basic anatomy of important muscles and bones.

### **UNIT-3**

Cell physiology: Structure, membrane, transport across cell membrane, Active, Passive, Organization of the Body, Body Composition, Body Fluid Volumes and its measurement, Diffusion, Osmosis, Tonicity, Homeostasis

### **UNIT-4**

Blood-composition, function, cellular component & their function, haemoglobin & anaemia, blood groups and coagulation

## **BVOPT-102 General Biochemistry**

### **UNIT 1**

Carbohydrates- Glucose; fructose; galactose; lactose; sucrose; starch and glycogen (properties and tests, Structure and function), Metabolism of carbohydrate,

### **UNIT 2**

Proteins -Amino acids, peptides, and proteins (general properties & tests with a few examples like glycine, tryptophan, glutathione, albumin, haemoglobin, collagen)

### **UNIT 3**

Lipids- Fatty acids, saturated and unsaturated, cholesterol and triacylglycerol, phospholipids and plasma membrane

### **UNIT 4**

Vitamins -General with emphasis on A, B2, C, E and inositol (requirements, assimilation and properties)

Minerals--Na, K, Ca, P, Fe, Cu and Se (requirements, availability and properties)

### **Unit 5**

Nucleotides and nucleic

acids DNA,

Replication

Organ function test: LFT, KFT, Gastric function test,

Cardiac function test

## **BVOPT-103 Geometrical optics-I**

### ***UNIT-1***

Nature of light- light as electromagnetic oscillation; speed of light in vacuum and other Media Wave fronts spherical, elliptical and plane. Reflection and refraction of light- laws of reflection and refraction. Total internal reflection. Refractive index -Its relation with wavelength, Fermat's and Huygen's Principle, Derivation of laws of reflection and refraction (Snell's law) from these principles

### ***UNIT 2***

Plane mirror and spherical mirror- convex and concave mirror Reflection by a spherical mirror paraxial approximation, sign convention Imaging by concave mirror and convex mirror Reflectivity transmissivity, Snell's Law, Refraction at a plane surface Glass slab

### ***UNIT 3***

Definition of crown and flint glasses; materials of high refractive index

Prism- Angle of prism; deviation produced by a prism; refractive index of the prism, definition of Prism diopter and application of prism.

### ***UNIT 4***

Vergence of light – convergence and divergence

Vergence at a distance formula, effectivity of a refracting surface, Image formation by a lens by application of vergence at a distance formula definitions of front and back vertex powers; equivalent power; first and second principal planes/points; primary and secondary focal planes/points; primary and Secondary focal lengths, Newton's formula

linear magnification; angular magnification Imaging by a thin convex lens and thin concave lens, image properties (real/virtual; erect/inverted magnified/minified) for various object positions ,System of two thin lenses; review of front and back vertex powers and equivalent ,Power, review of six cardinal points. System of more than two thin lenses; calculation of equivalent power using magnification formula.

## **BVOPT-104 Medical Ethics and Patients Care**

### **UNIT 1**

Medical ethics - Definition - Goal - Scope

Introduction to Code of conduct

### **UNIT 2**

Basic principles of medical ethics –Confidentiality

Malpractice and negligence - Rational and irrational drug therapy

### **UNIT 3**

Autonomy and informed consent - Right of patients

Care of the terminally ill- Euthanasia

### **UNIT 4**

Organ transplantation, Medico legal aspects of medical records –Medico legal case and type-  
Records and document related to MLC - ownership of medical records - Confidentiality  
Privilege communication - Release of medical information - Unauthorized disclosure -  
retention of medical records - other various aspects, Professional Indemnity insurance policy  
,Development of standardized protocol to avoid near miss or sentinel events ,Obtaining an  
informed consent.

## **BVOPT-105-Fundamental of Computers**

### **Unit-1**

Introduction to Computers

History of Computer, Generations, Characteristics, Advantages and limitations of Computer, Classification of Computers, Functional Components of Computer, input, Output and Processing, Concept of Hardware and Software, Data & Information. Concept of data storage. Number system. Decimal, Binary, Hexadecimal ASCII.

### **UNIT-2**

Introduction to GUI Based Operating System Basics of Operating system, Basics of DOS & LINUX, The User interface, File and directory management, Windows setting, Control Panel, devices and Printer setting, Using various window commands for desktop.

### **UNIT-3**

Word Processing

Word processing basics, Menu Bar, Opening and closing documents, save & save as, Page setup, print preview, and printing. Text creation and manipulation Editing, cut copy paste. Document creation, editing, Formatting the text – Paragraph indenting, bullets and numbering, changing case, Table manipulation – creation of table, insertion and deletion of cell, row and column.

### **UNIT-4**

Network basics, Internet Basics of computer network LAN, WAN etc, Concept of Internet, Basic of Internet Architecture, Services on Internet Architecture, World wide web and websites, Communication on Internet, Internet Services, Preparing Computer for Internet Access, ISPs and Examples, Internet Access Technologies. Web Browsing, configuring web browser, Popular search engines Downloading and printing web pages. Internet application Basics of E-mail, E-mail addressing, forwarding and searching, Composing



## **BVOPT-106-GENERAL ENGLISH AND SOFT SKILL**

### **Unit-1 Introduction to English language**

- a) Role and significance of English language in the present scenario
- b) English language: its relevance for the Indian industry.
- c) Introduction to listening, speaking, reading, writing and bench marking of the class.

### **Unit 2: Grammar and usage**

Verbs

Determiners

Active Voice and Passive Voice

Tenses

### **Unit 3:**

Letter writing & Notice Writing

### **Unit 4:**

Précis and Report writing

### **Practical Knowledge**

English communication Concept:

- a) About myself, my family and my friends
- b) Let's talk, making conversation, meeting and greeting
- c) My opinions, my likes and dislikes
- d) Life at collage, hostel and workplace: Conversation test

## **PRACTICALS:**

### **BVOPTP 101. PRACTICAL ANATOMY AND PHYSIOLOGY**

#### **Human anatomy (practical)**

Demonstration of

- Study of Human Skeleton parts with skeletal models.
- Study with charts and models of all organ systems mentioned above.
- Microscopic slides examination of elementary human tissues, cells.
- Major organs through models and permanent slides.
- Parts of circulatory system from models.
- Parts of respiratory system from models.
- Digestive system from models.
- Excretory system from models.

#### **Human Physiology (Practical)**

- To measure pulse rate
- To measure blood pressure
- To measure temperature
- Measurement of the Vital capacity
- Determination of blood groups
- Transport of food through esophagus
- Calculation and evaluation of daily energy and nutrient intake.
- Measurement of basal metabolic rate
- Demonstration of ECG
- Bile juice secretion and excretion 11. Urine formation and excretion

### **BVOPTP-102-PRACTICAL BIOCHEMISTRY**

- 1. Analysis of Normal Urine
- 2. Liver Function tests
- 3. Lipid Profile
- 4. Renal Function test
- 5. Blood gas and Electrolytes
- 6. Demonstration of Glucometer with strips

### **BVOPTP-103 PRACTICAL Geometrical optics-I**

- 1. Thick Prism – determination of prism angle and dispersive power; calculation of the refractive index
- 2. Thin Prism – measurement of deviation; calculation of the prism diopter
- 3. Image formation by spherical mirrors
- 4. Convex lens - power determination using lens gauge, power determination using distant object method; power determination using the Vergence formula
- 5. Concave lens – in combination with a convex lens – power determination

### **BVOPTP-104. Practical Medical Ethics and Patients Care**

- law and liability and duties of staff
- Workplace issues
- Bioethical issue
- Care and handling of patient
- Medico legal cases
- emergency care and life support skills
- CPR
- Vital signs and primary assessment
- bag-valve-masks

### **BVOPTP-105- PRACTICAL FUNDAMENTALS OF COMPUTER**

Starting MS WORD, Creating and formatting a document, Changing fonts and point size, Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, Inserting objects, Page setup, Page Preview, Printing a document, Mail Merge.

Starting Excel, Work sheet, cell inserting Data into Rows/ Columns, Alignment, Text wrapping , Sorting data, Auto Sum, Use of functions, referencing formula cells in other formulae , Naming cells, Generating graphs, Worksheet data and charts with WORD, Creating

Hyperlink to a WORD document , Page set up, Print Preview, Printing Worksheets.

Starting MS–Power Point, Creating a presentation using auto content Wizard, Blank Presentation, creating, saving and printing a presentation, Adding a slide to presentation, Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word

art gallery, Adding Transition and Animation effects, setting timings for slide show, preparing

note pages, preparing audience handouts, printing presentation documents, MS- Access, Creating tables and database, Internet, Use of Internet (Mailing, Browsing, Surfing).

## **2<sup>nd</sup> Semester**

### **BVOPT 201 Ocular Anatomy and physiology**

#### **Unit-1**

Central nervous system A brief Introduction, Spinal cord and brain stem Cerebellum and Cerebrum, Embryology of the Eye, Orbit, adnexa, Eye Ball

#### **UNIT-2**

Eye Lid, Conjunctiva, Cornea, Sclera Anterior chamber ,Uvea, Crystalline Lens ,Vitreous, Choroid, Retina, Protective mechanisms in the eye: Eye lids and lacrimation, description of the globe, Extrinsic eye muscles, their actions and control of their movements ,Coats of the eye ball ,Cornea , Aqueous humor and vitreous: Intra ocular pressure

#### **UNIT-3**

Iris and pupil ,Crystalline lens and accommodation, Mechanism of accommodation – presbyopia ,Retina – structure and functions ,Vision – general aspects of sensation Pigments of the eye and photochemistry ,The visual stimulus, refractive errors ,Visual acuity, Vernier acuity and principle of measurement ,Visual perception – Binocular vision, stereoscopic vision, optical illusions , Visual pathway, central and cerebral connections ,Colour vision and colour defects. Theories and diagnostic tests

#### **UNIT-4**

Introduction to electro physiology ,Scotopic and Photopic vision ,Color vision, Color mixing ,Retinal sensitivity and Visibility ,Receptive stimulation and flicker, Ocular, movements and saccades Visual perception and adaptation, Introduction to visual psychology (Psychophysics)

## **BVOPT-202 -Physical optics**

### **UNIT 1**

Nature of light- light as electromagnetic oscillation –wave equation; ideas of sinusoidal oscillations –simple harmonic oscillation; transverse nature of oscillation; concepts of frequency, wavelength, amplitude and phase. Sources of light; Electromagnetic Spectrum. Polarized light; linearly polarized light; and circularly polarized light

### **UNIT 2**

Intensity of polarized light Malus' Law; polarizers and analyzers; Methods of producing polarized light; Brewster's angle. Birefringence; ordinary and extraordinary rays Relationship between amplitude and intensity

### **UNIT 3**

Coherence- Interference; constructive interference, destructive interference; fringes; fringe width. Double slits, multiple slits, gratings. Diffraction; diffraction by a circular aperture; Airy's disc

### **UNIT 4**

Resolution of an instrument, Telescope, for example), Raleigh's criterion, Scattering; Raleigh's scattering; Tyndall effect, Fluorescence and Phosphorescence Basics of Lasers, Coherence; population inversion; spontaneous emission; Einstein's theory of lasers. Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and efficacy y curves; photometric units Inverse square law of photometry; Lambert's law. Other units of light measurement; retinal illumination; Trolands

## **BVOPT-203-Geometrical optics II**

### **UNIT 1**

Vergence and vergence techniques revised, schematic and reduced eyes, visual acuity, Emmetropia and ametropia

### **UNIT 2**

Blur retinal Imaginary, Correction of spherical ametropia, vertex distance and effective power, dioptric power of the spectacle, to calculate the dioptric power, angular magnification of spectacles in aphakic, Thin lens model of the eye –angular magnification – spectacle and relative, spectacle magnification.

### **UNIT 3**

Aperture stops- entrance and exit pupils., Astigmatism. - To calculate the position of the line image in a spherocylindrical lens

### **UNIT 4**

Accommodation, Accommodation formulae and calculations, Presbyopia- Spectacle magnification, angular magnification of spectacle lens, near point, calculation of add, depth of field.

Spatial distribution of optical information- modulation transfer functions- Spatial filtering- applications. Visual optics of aphakia and pseudophakia

## **BVOPT-204-Optometric Optics –I**

### **UNIT -1**

Introduction –Light, Mirror, Reflection, Refraction and Absorption Prisms –Definition, properties, Refraction through prisms, Thickness difference, Base-apex notation, uses, nomenclature and units, Sign Conventions, Fresnel's prisms, rotary prisms

### **UNIT- 2**

Lenses –Definition, units, terminology used to describe, form of lenses Vertex distance and vertex power, Effectivity calculations

### **UNIT -3**

Lens shape, size and types i.e. Spherical, cylindrical and Sphero-cylindrical Transpositions – Simple, Toric and Spherical equivalent

### **UNIT- 4**

Prismatic effect, centration, decentration and Prentice rule, Prismatic effect of Plano-cylinder and Spherocylinder lenses Spherometer & Sag formula, Edge thickness calculations  
Magnification in high plus lenses, Minification in high minus lenses Tilt induced power in spectacles, Aberration in Ophthalmic Lense



## **BVOPT-205- ORIENTATION IN PARACLINIC SCIENCE.**

### **UNIT-1**

#### **PARASITOLOGY**

Entamoeba Histolytica ,Leishmania , Material Parasites of man ,Helminthology Taenia Saginata , Taenia Soleum , Echinococcus granulosus , Ascaris Lumbricoides Ancylostomaduodenale ,Strong ylidstercoralis

### **UNIT-2**

#### **MICROBIOLOGY**

Morphology & Physiology of Bacteria , Staphylococcus ,. Streptococcus Mycobacterium tuberculosis ,Spirochetes, Corynebacterium Diphtheria.

### **UNIT-3**

#### **VIRUS 1**

General Properties of Virus, Herpes virus ,Poliovirus ,Hepatitis virus ,Oncogenic virus , HIV

### **UNIT-4**

**PATHOLOGY** Inflammation, Neoplasia ,Osteomyelitis , Fractures , Osteoporosis , Rickets.

## **BVOPT-206-BASIC OF HEALTH MARKET AND ECONOMY**

### **Unit I**

Health Care Market an Introduction : Main Problems in the Market for Health Care, Health Care and Economic Basics, Analysing Health Care Markets. Demand-Side Considerations: Demand for Health and Health Care, Market for Health Insurance

### **Unit II**

Supply-Side Considerations: Managed Care, Health Care Professionals, Hospital Services, Confounding Factors Public Policy in Medical Care: Policies to Enhance Access, Policies to Contain Costs, Medical Care Systems Worldwide,

### **UNIT-III**

Health Sector in India: An Overview Health Outcomes; Health Systems; Health Financing Evaluation of Health Programs Costing, Cost Effectiveness and Cost-Benefit Analysis; Burden of Diseases ,Role of WHO , Health Care Budget: purpose, types & practices in Indian context.

### **UNIT-IV**

Health Economics: Fundamentals of Economics: Scope & coverage of Health Economics, demand for Health Sciences; Health as an investment, population, Health & Economic Development. Tools of Economics-Concepts of need, demand, supply & price in Health Services. Methods & Techniques of Economic Evaluation of Health Programmes: Cost benefit & cost-effective methods-output & input analysis. Market, monopoly, perfect & imperfect competition. Health Financing from various sources – Public , Private, TPA.

Economics of Health Programmes for Nutrition, diet & population control, economics of abuse of tobacco & alcohol, environmental influences on health and feeding. Economics of Communicable (STDs & Malaria) & non-communicable (IHD & Cancers) diseases.

## **PRACTICALS:**

### **BVOPTP 201 PRACTICAL Ocular Anatomy and physiology**

1. Practical dissection of bull's eye
2. Orbit: Practical demonstration of orbital structure

### **DEMONSTRATION OF:**

Eye Lid,

Conjunctiva,

Cornea,  
Sclera Anterior chamber  
Uvea,  
Crystalline Lens ,  
Vitreous,  
Choroid,  
Retina  
Lid movements  
Tests for lacrimation tests  
Extra ocular movements  
Break up time  
Pupillary reflexes  
Applanation tonometry  
Schiotz tonometry.  
Measurement of accommodation and convergence  
Visual acuity measurement.  
Direct ophthalmoscopy  
Indirect ophthalmoscopy  
Retinoscopy  
Light and dark adaptation.  
Binocular vision( Stereopsis)

### **BVOPTP-202-PRACTICAL PHYSICAL OPTICS**

Methods of producing polarized  
amplitude and intensity  
Double slits, multiple slits, gratings. Diffraction; diffraction by a circular aperture; Airy's  
disc Telescope, for example  
Fluorescence and Phosphorescence  
Basics of Lasers,  
Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and

## **BVOPTP-203 -GEOMETRICAL OPTICS II PRACTICAL**

Construction of a tabletop telescope – all three types of telescopes.

Construction of a tabletop microscope

Imaging by a cylindrical lens – relationship between cylinder axis and image orientation

Imaging by two cylinders in contact – determination of the position of CLC; verification of CLC using a spherical lens with power equal to the spherical equivalent; orientations and position of the line images and their relation to the cylinders' powers and orientations

5. Imaging by a spherocylindrical lens – sphere and cylinder in contact – determination of the position of CLC; verification of CLC using a spherical lens with power equal to the spherical equivalent; orientations and position of the line images and their relation to the cylinder's power and orientation

## **BVOPTP- 204-PRACTICAL OPTOMETRIC OPTICS-1**

1. Measurement of lens power , lens centration using conventional techniques
2. Transposition of various types of lenses
3. Knowledge to identify different forms of lenses
  - a. (equi- convex, planoconvex, periscopic, etc.)
4. Knowledge to select the tool power for grinding process.
5. Measurement of surface powers using lens measure.
6. Method of laying off the lens for glazing process.

## **BVOPTP-205 Orientation in para clinic science**

- Know the diagnostic techniques used in pathology
- Know the various categories of the causes of diseases
- Know the course, outcome, consequences of diseases
- Compound Microscope
- Dark ground Microscopy
- Measurement of Microorganisms
- Hanging drop Preparation
- Isolation of Pure Cultures
- Bacterial Staining

- Simple Staining
- Gram's Staining
- Acid Fast Staining
- Albert's Staining
- Capsule Staining

## **B.Voc Optpmetry Technology**

### **B.Voc(OPT)**

### **Year-2 Advance Diploma**

#### **BVOPT-301-General and ocular microbiology**

##### **UNIT -1**

Morphology and principles of cultivating bacteria

##### **UNIT -2**

Sterilization and disinfections used in laboratory and hospital practice

##### **UNIT- 3**

Common bacterial infections of the eye.

##### **UNIT -4**

Common fungal infections of the eye

Common viral infections of the eye. Common parasitic infections of the eye

#### **BVOPT 302-Visual Optics- I**

##### **UNIT- 1**

Review of Geometrical Optics: Vergence and power object space and image space Sign convention, Spherical refracting surface Spherical mirror Cardinal points Magnification Light and visual function Clinical Relevance of: Fluorescence, Interference, Diffraction, Polarization. Spherical and chromatic aberration, application of chromatic aberration.

##### **UNIT- 2**

Optics of Ocular Structure

Cornea and aqueous

Crystalline lens ,Vitreous  
Schematic and reduced eye

### **UNIT-3**

Measurements of Optical Constants of the Eye

Corneal curvature and thickness

Keratometry

Curvature of the lens and ophthalmophakometry

Axis and angle of the eye

### **UNIT -4**

Basic Aspects of Vision

Visual Acuity

Light and Dark Adaptation

Spatial and Temporal Resolution

Science of Measuring visual performance and application to Clinical Optometry

Refractive anomalies and their causes

Etiology of refractive anomalies

Population distributions of anomalies.

Optical component measurements

Growth of the eye in relation to refractive

## **BVOPT-303-Optometric Optics – II**

### **UNIT -1**

Spectacle Lenses, Manufacture of glass, Lens materials, Lens surfacing ,Principle of surface generation and glass cements, Terminology used in Lens workshop, Lens Quality, Lens properties, Methods of Inspecting the quality of lenses

### **UNIT -2**

Spectacle Frames, Types and part, Classification of spectacle frames-material, weight, temple position, Coloration, Frame selection, Frame & lens measurements and selection

### **UNIT – 3**

Tinted & Protective Lenses, Characteristics of tinted lenses Absorptive Glasses, Safety lenses-Toughened lenses, Laminated Lenses, CR 39 Polycarbonate Lenses, Reflection from spectacle lenses - ghost images

### **UNIT – 4**

Multifocal Lenses- Introduction, history and development, types, Bifocal lenses, Trifocal & Progressive addition lenses Reflections in bifocals at the dividing line, Marking and measurement in dispensing optics. Antireflection coating, Mirror coating, Hard Multi Coating [HMC], Spectacle magnifiers, Lenticular & Aspherical lenses, Special types of spectacle, Industrial safety glasses, Frame availability in Indian market, Soft skills and professional communication with Patient and Customers

## **BVOPT-304-Optometric Instruments**

### **UNIT-1**

Refractive instruments

- Test charts standards.
- Choice of test chart
- Trial case lenses
- Refractor (phoropter) head unit
- Trial frame design
- Near vision difficulties with units and trial frame
- Retinoscope – types available
- Adjustment of Retinoscopes- special features
- Objective optometers.

### **UNIT- 2**

- Infrared optometer devices.
- Projection charts
- Illumination of the consulting room.

- Brightness acuity test
- Vision analyser
- Pupilometer
- Potential Acuity Meter
- Abberometer

### ***UNIT -3***

- Ophthalmoscopes and related devices
- Design of ophthalmoscopes – illumination, Filters for ophthalmoscopy
- Indirect ophthalmoscope

### **UNIT -4**

- Lensometer, Lens gauges or clock
- Slit lamp
- Tonometers
- Keratometer and corneal topography
- Refractometer
- Orthoptic Instruments (Synaptophore Only)
- Color Vision Testing Devices
- Fields of Vision And Screening Devices
  - A Scans (Details)
- Only Short Introduction-
  - B Scan, ERG, VEP, OCT



## **BVOPT-305-ADVANCE COMPUTING SKILL**

### **Unit-1**

Advance Word Processing Tools Setting the layout of Table and documents, Mail merge techniques. Letter envelopes etc, Using spell check and Thesaurus, Foot note and Endnotes, Using Charts , shapes and pictures in word .

### **Unit-2**

Basics of Spreadsheet Functions of Spreadsheet , Applications , Elements of Electronic Spread sheet ,creating document saving and printing the worksheet, manipulation of cells ,Functions and charts, using formulas , Functions and charts

### **UNIT-3**

Advance Spreadsheet Tools Manipulations with charts and its types, Sorting, Filtering of data ,Pivot table, data validation techniques. Grouping and subtotalling of data. Text to column option . Printing of customized worksheet.

### **UNIT-4**

Presentation Software\ Using PowerPoint, Opening an PowerPoint presentation, Saving a presentation , Entering and editing text, inserting and deleting slides in a presentation , preparation of slides , adding clip arts, charts etc., Providing Aesthetics , enhancing text presentation ,working with color lines styles and movie and sound ,adding header and footer, presentation.

## **BVOPT-306-HUMAN VALUE AND PROFESSIONAL ETHICS**

### **UNIT-1**

Need, Basic Guidelines, Content and Process for Value Education Understanding the need, basic guidelines, content and process for Value Education Self-Exploration its content and process, Natural Acceptance' and Experiential Validation- as the mechanism for self-exploration Continuous Happiness and Prosperity- A look at basic Human Aspirations Right understanding, Relationship and Physical Facilities- the basic requirements for fulfilment of aspirations of every human being with their correct priority Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario Method to fulfil the above human aspirations: understanding and living in harmony at various levels

### **UNIT 2:**

Understanding Harmony in the Human Being Understanding human being Understanding the Body as an instrument Understanding the harmony of Body, correct appraisal of Physical needs, meaning of Prosperity in detail

### **UNIT 3:**

Understanding Harmony in the Family and Society-

Harmony in Human Relationship

Understanding Harmony in the family – the basic unit of human interaction

Understanding values in human-human relationship

Trust and Respect as the foundational values of relationship

Understanding the meaning of trust

Difference between intention and competence. Understanding the meaning of respect

Understanding the harmony in the society (society being an extension of family)

### **UNIT-4**

Natural acceptance of human values

Definitiveness of Ethical Human Conduct

Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

Competence in professional ethics:

- a) Ability to utilize the professional competence for augmenting universal human order
- b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
- c) Ability to identify and develop appropriate technologies and management patterns for above production systems.

Case studies of typical holistic technologies, management models and production systems

Strategy for transition from the present state to Universal Human Order:

- a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
- b) At the level of society: as mutually enriching institutions and organizations

**PRACTICALS:**

**BVOPTP -301 PRACTICALS General and ocular microbiology**

DEMONSTRATION OF:

cultivating bacteria

Sterilization and disinfections u in laboratory and hospital practice

Common bacterial infections of the eye.

Common fungal infections of the eye

Common viral infections of the eye.

Common parasitic infections of the eye

**BVOPTP-302-PRACTICAL Visual Optics- I**

DEMOSTRATION OF:

Interference,

Diffraction,

Polarization

Optics of Ocular Structure

Cornea and aqueous

Crystalline lens ,

Vitreous

Measurements of Optical Constants of the Eye

Corneal curvature and thickness

Keratometry

Curvature of the lens and ophthalmophakometry

Axis and angle of the eye

Basic Aspects of Vision

Visual Acuity

Light and Dark Adaptation

Growth of the eye in relation to refractive

## **BVOPTP-303- PRACTICAL Optometric Optics – II**

1. Find out the meridian & optical center of ophthalmic lens ,
2. Neutralization – manual & help of Lensometer
3. Identification of lens-spherical, cylindrical & sphero-cylindrical lenses ,
4. Lens-surfacing & edging, cutting & marking of single vision bifocal progressive
5. Frame measurement: The boxing system, the datum system. Comparison of the two systems, Lens position, segment specification,
6. Frame selection: Fashion, Function & standard alignment ,
7. Lens selection: Ground rule for selection, selection criteria,
8. Facial measurements: The PD, Visual axes, & measuring inter-Pupillary distance using P.D ruler., Common difficulties in measuring P.D, Measuring monocular P.D, measuring near C.D. , Measuring heights :- single vision , bifocal, multifocal, progressive,
9. Pediatric dispensing.

## **BVOPTP-304- PRACTICAL Optometric Instruments**

DEMONSTRATION OF:

- Refractive instruments
- Test charts standards.
- Choice of test chart
- Trial case lenses
- Refractor (phoropter) head unit
- Trial frame design
- Retinoscope
- Infrared optometer devices.
- Pupilometer
- Potential Acuity Meter
- Abberometer
- Ophthalmoscopes a
- Slit lamp
- Tonometers
- Keratometer and corneal topography
- Refractometer

## **305-BVOPTP- Practical Advance Computing skills**

Word Processing

Mail merge techniques

Using Charts , shapes and pictures in word .

Basics of Spreadsheet

document saving and printing the worksheet

formulas , Functions and charts

Advance Spreadsheet Tools

worksheet.

Presentation Software

Using Powerpoint working with color lines

styles and movie and sound ,presentations.

## 4<sup>th</sup> Semester

### **BVOPT- 401-- SYSTEMIC DISEASE & OCULAR DISEASE**

#### **UNIT-1**

• Orbit, Applied Anatomy • Proptosis (Classification, Causes, Investigations) • Enophthalmos • Lids-Applied Anatomy • Congenital anomalies (Ptosis, Coloboma, Epicanthus, Distichiasis, Cryptophthalmos) • Oedema of the eyelids(Inflammatory, Solid, Passive edema) • Inflammatory disorders (Blepharitis, External Hordeolum, Chalazion, Internal hordeolum, Molluscum Contagiosum) • Anomalies in the position of the lashes and Lid Margin (Trichiasis, Ectropion, Entropion, Symblepharon, Blepharophimosis, Lagophthalmos, Blepharospasm, Ptosis). • Lacrimal System • Applied Anatomy • Tear Film • The Dry Eye ( Sjogren's Syndrome) • Dacryocystitis & Dacryoadenitis

#### **UNIT-2**

• Conjunctiva • Applied Anatomy • Inflammations of conjunctiva ( Infective conjunctivitis – bacterial, chlamydial, viral , Allergic conjunctivitis, Granulomatous conjunctivitis) • Degenerative conditions( Pinguecula, Pterygium, Concretions) • Symptomatic conditions( Hyperaemia, Chemosis, Ecchymosis, Xerosis, Discoloration) • Cysts and Tumors • Cornea-Applied Anatomy and Physiology • Congenital Anomalies (Megalocornea, Microcornea, Cornea plana, Congenital cloudy cornea) • Inflammations of the cornea (Topographical classifications: Ulcerative keratitis and Non ulcerative • Etiological classifications: Infective, Allergic, Trophic, Traumatic, Idiopathic) • Degenerations ( Arcus senilis, Vogt's white limbal girdle, Hassal-henle bodies, Band shaped keratopathy, Salzmann's nodular degeneration, Pellucid Marginal degeneration)

#### **UNIT-2**

• Dystrophies ( Reis Buckler dystrophy,Recurrent corneal erosion syndrome, Granular dystrophy, Lattice dystrophy, Macular dystrophy, cornea guttata, Fuch's epithelial endothelial dystrophy, Congenital hereditary endothelial dystrophy) • Keratoconus, Keratoglobus Uveal Tract and Sclera • Applied Anatomy, • Classification of uveitis-Etiology, Pathology, clinical features and management. • Endophthalmitis • Panophthalmitis • Pars Planitis • Episcleritis and scleritis • Clinical examination of Uveitis and Scleritis • Crystalline lens- Dislocation, opacification, subluxation and surgical management,Hypertension ,Diabetes Mellitus ,Diabetic Retinopathy ,Thyroid Disease-- Thyroiditis, Thyroid tumors, Grave's Ophthalmopathy ,Acquired Heart Disease-Ischemic Heart Disease, Congestive heart failure, Disorders of cardiac ,rhythm, Ophthalmic considerations ,Cancer,Connective Tissue Disease ,Tuberculosis- Herpes virus (Herepes simplex, Varicella Zoster, Cytomegalovirus), Herpes and the eye ,Hepatitis (Hepatitis A, B, C) ,Acquired Immunodeficiency Syndrome Anemia , Malaria ,Typhoid ,Dengue ,Onchocerciasis, Cysticercosis, Leprosy Nutritional and Metabolidisorders: Kwashiorkor ,Vitamin Deficiency Myasthenia Gravis ,First Aid

## **BVOPT-402-CLINICAL EXAMINATION OF THE VISUAL SYSTEM**

### **UNIT 1**

- History taking
- Visual acuity estimation
- Extraocular motility, Cover test, Alternating cover test
- Hirschberg test, Modified Krimsky

### ***UNIT 2***

- Pupils Examination
- Maddox Rod
- Van Herrick
- External examination of the eye, Lid Eversion

### ***UNIT 3***

- Schirmer's, TBUT, tear meniscus level, NITBUT (keratometer),
- Color Vision
- Stereopsis
- Confrontation test

### **UNIT-5**

- Photostress test
- Slit lamp biomicroscopy
- Ophthalmoscopy • Tonometry
- ROPLAS • Amsler test • Contrast sensitivity function test • Saccades and pursuit test

## **BVOPT-403-Visual Optics- II & Dispensing Optics**

### **UNIT- 1**

• Accommodation & Presbyopia • Far and near point of accommodation • Range and amplitude of accommodation • Anomalies of accommodation • Presbyopia

### **UNIT- 2**

• Convergence • Type, Measurement and Anomalies • Relationship between accommodation & convergence (AC/A ratio)

### **UNIT- 3**

• Objective refraction (Static & Dynamic) • Streak retinoscopy • Principle, Procedure, Difficulties and interpretation of findings • Transposition and spherical equivalent • Dynamic retinoscopy various methods • Radical retinoscopy and near retinoscopy • Cycloplegic refraction

### **UNIT- 4**

• Subjective Refraction • Principle and fogging • Fixed astigmatic dial(Clock dial),Combination of fixed and rotator block test),J.C.C dial(Fan ) • Duochrome test • Binocular balancing- alternate occlusion, prism dissociation, dissociate • Duochrome balance, Borish dissociated fogging• Effective Power & Magnification • Ocular refraction vs. Spectacle refraction • Spectacle magnification vs. Relative spectacle magnification • Axial vs. Refractive Ametropia, Knapp's law • Ocular accommodation vs. Spectacle accommodation • Retinal image blur-Depth of focus and depth of field



## **BVOPT-404-BASIC AND OCULAR PHARMACOLOGY**

### **UNIT -1**

General Pharmacology: Introduction & sources of drugs, Routes of drug administration, Pharmacokinetics (emphasis on ocular pharmacokinetics), Pharmacodynamics & factor, modifying drug

### **UNIT- 2**

Systemic pharmacology- ANS, drugs affecting pupillary size and light reflex, intraocular tension, Accommodation. General & local anesthetics, Chemotherapy: Introduction on general chemotherapy, specific chemotherapy Antiviral, antifungal, antibiotics; steroids, Anti-diabetics; Blood Coagulants

### **UNIT 3**

Ocular Pharmacology: Ocular preparations, Ocular pharmacokinetics, methods of drug, administration and special drug delivery system, Ocular toxicology.

### **UNIT 4**

Diagnostic & Therapeutic applications of drugs used in Ophthalmology: Diagnostic Drugs & biological agents used in ocular surgery, Anaesthetics used in ophthalmic procedure Antiglaucoma drugs; Pharmacotherapy of ocular infections –Bacterial, viral, fungal.

## **BVOPT-405-HEALTH AND FITNESS**

### **Unit 1:**

Personal Health, Nutrition, and Fitness

Your Lifestyle and Your Health

Your Role in Maintaining Your Health

Guidelines for a Healthy Diet

Dietary Guidelines and Nutritional Facts

Nutrition and Chronic Diseases

Individual Caloric and Nutritional Needs

Benefits of Physical Activity

## **Unit 2**

Preventing Disease and Injury

Immunity and Preventing Disease

Lifesaving and Emergency Care Procedures

Strategies for Preventing Accidents

## **Unit 3**

Growth, Development, and Sexuality

Human Reproduction and Development

Benefits of Healthy Sexual Practices

Peer Pressure and Sexual Activity

Family Planning Strategies

## **Unit 4**

Substance Abuse

Health Effects of Using Alcohol, Tobacco, and Other Drugs

Harmful Effects of Dietary Supplements and Anabolic Steroids

Effects of Medicines and Illegal Substances

Peer Pressure Substance Abuse

## **BVOPT-406-Advance communication and soft skill**

### **UNIT-1**

Functional Grammar-II

- a) Application writing
- b) Paragraph writing, essay writing and précis writing
- c) Pre-testing of oral and writing skills

### **UNIT-2**

Professional Skills

- a) Biodata, CV and resume writing

- b) Joining letter, cover letter and resignation letter
- c) Inter- office memo, formal Business letter, informal notes
- d) Minutes of the meeting, reporting events, summary writing

### **UNIT-3**

#### Presentation skills

- a) Power-point presentations and presenting techniques
- b) Body language
- c) Describing people, places and events
- d) Extempore, speech and just- a minute sessions

### **UNIT-4**

#### Interview skills

- a) Developing skills to- debate, discussion, basics of GD and styles of GD
- b) Discussion in groups and group discussion on current issues
- c) Steps to prepare for an interview and mock interviews

#### Public speaking

- a) Art of public speaking
- b) Welcome speech
- c) Farewell speech
- d) Votes of thanks

#### Oral practice

- a) Debate
- b) Just-a-minute
- c) Group discussion
- d) Mock interviews

**PRACTICALS:**

**BVOPTP-401 Practical Systemic Disease, Ocular Diseases**

DEMONSTRATION OF:

Proptosis (Classification, Causes, Investigations)

Enophthalmos

Lids-Applied Anatomy

Congenital anomalies (Ptosis, Coloboma, Epicanthus, Distichiasis, Cryptophthalmos)

Oedema of the eyelids(Inflammatory, Solid, Passive edema) Inflammatory disorders  
(Blepharitis, External Hordeolum,

Conjunctiva

Inflammations of the cornea (Topographical classifications: Ulcerative keratitis and Non  
ulcerative

Dystrophies

Keratoconus, Keratoglobus Uveal Tract and

Endophthalmitis

Panophthalmitis

Pars Planitis

Episcleritis and scleritis

**BVOPTP- 402- Practical Clinical Examination Of Visual System**

DEMONSTRATION OF:

History taking

Visual acuity estimation

Extraocular motility,

Cover test, Alternating cover test  
Hirschberg test, Modified Krimsky  
Pupils Examination  
Maddox Rod  
Van Herrick  
External examination of the eye, Lid Eversion  
Color Vision  
Stereopsis  
Confrontation test  
Photostress test  
Slit lamp biomicroscopy  
Ophthalmoscopy  
Tonometry

**BVOPTP -403- PRACTICAL-Visual Optics- II & Dispensing Optics**

DEMONSTRATION OF:

Presbyopia  
Far and near point of accommodation  
Convergence  
Dynamic retinoscopy  
Radical retinoscopy and near retinoscopy  
Cycloplegic refraction

**BVOPTP-404-PRACTICAL-Basic And Ocular Pharmacology**

DEMONSTRATION OF:

Routes of drug administration  
drugs affecting pupillary size  
light reflex, intraocular tension

Blood Coagulants

Ocular preparations,

methods of drug administration and special drug delivery system,

Ocular toxicology.

Anaesthetics used in ophthalmic procedure

Antiglaucoma drugs

### **BVOPTP-405-PRACTICAL-Health and fitness**

DEMONSTRATION OF:

Personal Health

Dietary Guidelines

Substance Abuse

Health Effects of Using Alcohol, Tobacco, and Other Drugs

Effects of Medicines and Illegal Substances

### **5<sup>th</sup> Semester**

### **BVOPT-501-CONTACT LENS I**

#### **UNIT 1**

- Introduction to Contact lenses
- Definition and Classification
- History of Contact Lenses
- Optics of Contact Lenses
- Magnification & Visual field
- Accommodation & Convergence
- Back & Front Vertex Power / Vertex distance calculation
- Review of Anatomy & Physiology of Tear film
- Cornea • Lids & Conjunctiva

## **UNIT 2**

- Introduction to CL materials
- Monomers, Polymers
- Properties of CL materials
- Physiological (Dk, Ionicity, Water content)
- Physical (Elasticity, Tensile strength, Rigidity)
- Optical (Transmission, Refractive index)
- Indications and contraindications
- Parameters / Designs of Contact Lenses & Terminology

## **UNIT 3**

- RGP Contact Lens materials
- Manufacturing Rigid and Soft Contact Lenses – various methods
- Pre-Fitting examination – steps, significance, recording of results
- Correction of Astigmatism with RGP lens

## **UNIT 4**

- Types of fit – Steep, Flat, Optimum – on spherical cornea with spherical lenses • Types of fit – Steep, Flat, Optimum – on Toric cornea with spherical lenses • Calculation and finalising Contact lens parameters • Ordering Rigid Contact Lenses – writing a prescription to the Laboratory • Checking and verifying Contact lenses from Laboratory • Modifications possible with Rigid lenses • Common Handling Instructions • Insertion & Removal Techniques • Do's and Don't's • Care and Maintenance of Rigid lenses • Cleaning agent & Importance • Rinsing agents & Importance • Disinfecting agents & importance • Lubricating & Enzymatic cleaners • Follow up visit examination • Complications of RGP lenses

## **BVOPT-502-Low Vision Care**

### **UNIT 1**

- Definitions & classification of Low vision • Epidemiology of low vision • Model of low vision service

### **UNIT 2**

- Pre-clinical evaluation of low vision patients – prognostic & psychological factors; psycho-social impact of low vision • types of low vision aids – optical aids, non-optical aids & electronic devices • Optics of low vision aids

### **UNIT 3**

- Clinical evaluation – assessment of visual acuity, visual field, selection of low vision aids, instruction & training • Pediatric Low Vision care

#### **UNIT 4**

- Low vision aids – dispensing & prescribing aspects • Visual rehabilitation & counselling

Legal aspects of Low vision in India • Case Analysis

### **BVOPT-503-Geriatric Optometry & Pediatric Optometry**

#### **UNIT 1**

• Structural , and morphological changes of eye in elderly • Physiological changes in eye in the course of aging. • Introduction to geriatric medicine – epidemiology , need for optometry care, systemic diseases (Hypertension, Atherosclerosis, coronary heart disease, congestive Heart failure, Cerebrovascular disease, Diabetes, COPD) • Optometric Examination of the Older Adult • Ocular diseases common in old eye, with special reference to cataract, glaucoma, macular disorders, vascular diseases of the eye

#### **UNIT 2**

• Contact lenses in elderly • Pharmacological aspects of aging • Low vision causes, management and rehabilitation in geriatrics. • Spectacle dispensing in elderly – Considerations of spectacle lenses and frames

#### **UNIT 3**

• The Development of Eye and Vision • History taking ,Paediatric subjects • Assessment of visual acuity • Normal appearance, pathology and structural anomalies of • Orbit, Eye lids, Lacrimal system, • Conjunctiva, Cornea, Sclera Anterior chamber, Uveal tract, Pupil Lens, vitreous, Fundus Oculomotor system • Refractive Examination

#### **UNIT 4**

• Determining binocular status • Determining sensory motor adaptability • Compensatory treatment and remedial therapy for : Myopia, Pseudomyopia, Hyperopia, Astigmatism, Anisometropia, Amblyopia • Remedial and Compensatory treatment of Strabismus and Nystagmus • Paediatric eye disorders: Cataract, Retinopathy of Prematurity, Retinoblastoma, Neuromuscular conditions (myotonic dystrophy, mitochondrial cytopathy), and Genetic.

Anterior segment dysgenesis, Aniridia, Microphthalmos, Coloboma, Albinism • Spectacle dispensing for children • Paediatric contact lenses • Low vision assessment in children



## **BVOPT-504-Binocular Vision**

### **UNIT 1**

• Binocular Vision and Space perception. Relative subjective visual direction • Retino motor value • Grades of BSV • SMP and Cyclopean Eye Correspondence, • Fusion, Diplopia, Retinal rivalry Horopter • Physiological Diplopia and Suppression • Stereopsis, Panum's area, BSV. • Stereopsis and monocular clues - significance. • Egocentric location, clinical applications. • Theories of Binocular vision.

### **UNIT 2**

• Anatomy of Extra Ocular Muscles. Rectii and Obliques, LPS • Innervation & Blood Supply • Physiology of Ocular movements. • Center of rotation, Axes of Fick. • Action of individual muscle. • Laws of ocular motility • Sherrington's law • Hering's law • Uniocular & Binocular movements - fixation, saccadic & pursuits. • Version & Vergence. • Fixation & field of fixation

### **UNIT 3**

• Near Vision Complex Accommodation • Definition and mechanism (process). • Methods of measurement. • Stimulus and innervation.

• Types of accommodation. • Anomalies of accommodation – aetiology and management.

### **UNIT 4**

• Convergence • Definition and mechanism. • Methods of measurement. • Types and components of convergence - Tonic, accommodative, fusional, proximal  
Anomalies of Convergence – aetiology and management. • Sensory adaptations • Confusion Suppression- investigation and management • Blind spot syndrome • Abnormal Retinal Correspondence • Investigation and management • Blind spot syndrome • Eccentric Fixation-investigation and management • Amblyopia-classification, etiology, investigations and management

## **BVOPT-505-Digital literacy & Account literacy**

### **Unit 1:**

Review of MS office  
Advance options in MS excel  
Excel  
Power point  
Introduction to internet learning platform  
Using internet-based learning platform  
Using google and you tube for learning  
Using smart phone to become smart

### **UNIT-2**

Benefits of digital learning  
Using internet for personal requirement  
Online payments method  
Use of social media for advisement  
Digital security and privacy  
Various cybercrime and their safety guideline  
Best practice for securing online and network transaction  
Managing privacy and security and social media accounts

### **UNIT-3**

Introduction and basic of financial planning  
Concept of time and value of money  
Risk and return  
Myths about easy money  
Financial planning with examples  
Introduction to financial market and institution investment option in post office  
Sources of finance  
Capital market basics  
Basic of money market

Mutual funds

#### **UNIT-4**

Life insurance

General insurance

Types of banks

KYC

Function of commercial banks and RBI and its function

Deposit accounts-understanding of operation

Retail finance

Personal loan

Corporate banking

Cheque collecting services

Payments modes in banking system

### **BVOPT-506-introduction to national healthcare system**

#### **UNIT-1**

##### **1. Introduction to healthcare delivery system**

- a. Healthcare delivery system in India at primary, secondary and tertiary care
- b. Community participation in healthcare delivery system
- c. Health system in developed countries.
- d. Private Sector
- e. National Health Mission
- f. National Health Policy
- g. Issues in Health Care Delivery System in India

#### **UNIT-2**

2. National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.

#### **UNIT-3**

3. Introduction to AYUSH system of medicine

- a. Introduction to Ayurveda.
- b. Yoga and Naturopathy
- c. Unani
- d. Siddha
- e. Homeopathy
- f. Need for integration of various system of medicine

#### **UNIT0-4**

#### 4. Health scenario of India- past, present and future

##### Demography & Vital Statistics-

- a. Demography – its concept
- b. Vital events of life & its impact on demography
- c. Significance and recording of vital statistics
- d. Census & its impact on health policy

#### 6. Epidemiology

- a. Principles of Epidemiology
- b. Natural History of disease
- c. Methods of Epidemiological studies
- d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

## **PRACTICALS:**

### **BVOPTP-501- PRACTICAL Contact Lens**

1. Measurement of Ocular dimensions
2. Pupillary diameter and lid characteristics
3. Blink rate and TBUT
4. Schirmer's test, Slit lamp examination of tear layer
5. Keratometry
6. Placido's disc
7. Soft Contact Lens fitting – Aspherical
8. Soft Contact Lens fitting – Lathecut lenses
9. Soft Contact Lens over refraction
10. Lens insertion and removal
11. Lens handling and cleaning
12. Examination of old soft Lens
13. RGP Lens fitting
14. RGP Lens Fit Assessment and fluorescein pattern
15. Special RGP fitting (Aphakia, pseudo phakia & Keratoconus)
16. RGP over refraction and Lens flexure
17. Examination of old RGP Lens
18. RGP Lens parameters
19. Slit lamp examination of Contact Lens wearers

### **BVOPTP-502-PRACTICAL Low Vision Care**

1. Attending in low vision care clinic and history taking.

Practical 2:

1. Determining the type of telescope and its magnification (Direct comparison method & calculated method)
2. Determining the change in field of view with different magnification and different eye to lens distances with telescopes and magnifiers.
1. Inducing visual impairment and prescribing magnification.
2. Determining reading speed with different types of low vision aids with same magnification.
3. Determining reading speed with a low vision aid of different magnifications.

### **BVOPTP-503-PRACTICAL-Geriatric Optometry & Pediatric Optometry**

Deals with hand-on session the different geriatric and paediatric evaluation techniques

### **BVOPTP-504-PRACTICAL Binocular Vision**

#### **DEMONSTRATION OF:**

Binocular Vision and Space perception

SMP and Cyclopean Eye Correspondence,

Stereopsis, Panum's area, BSV.

Anatomy of Extra Ocular Muscles. Rectii and Obliques, LPS

Innervation & Blood Supply

Blind spot syndrome

Amblyopia, Deals with hand-on session the basic binocular vision evaluation techniques.

## **BVOPTP-505-Practical Digital literacy and account literacy**

Uses Advance options in MS excel

Excel

Power point

Using internet-based learning platform

Using google and you tube for learning

Using smart phone to become smart

Using internet for personal requirement

Online payments method

Use of social media for advisement

## **6<sup>th</sup> Semester**

### **BVOPT-601-Contact Lens – II**

#### **UNIT 1**

• SCL Materials & Review of manufacturing techniques • Comparison of RGP vs. SCL • Pre-fitting considerations for SCL

#### **UNIT 2**

• Fitting philosophies for SCL • Fit assessment in Soft Contact Lenses: Types of fit – Steep, Flat, Optimum • Calculation and finalising SCL parameters 6.1 Disposable lenses • Advantages and availability

#### **UNIT 3**

• Soft Toric CL- Stabilization techniques, Parameter selection • Fitting assessment • Common Handling Instructions- Insertion & Removal Techniques, Do's and Don'ts • Care and Maintenance of Soft lenses Cleaning agents & Importance

#### **UNIT 4**

• Rinsing agents & Importance • Disinfecting agents & importance • Lubricating & Enzymatic cleaners • Follow up visit examination • Complications of Soft lenses • Therapeutic contac lenses- Indications • Fitting consideration • Specialty fitting Aphakia • Pediatric • Post refractive surgery • Management of Presbyopia with Contact lenses

## **BVOPT-602-Occupational Optometry**

### **UNIT 1**

Introduction to Occupational health, hygiene and safety, international bodies like ILO, WHO, National bodies etc. - Acts and Rules - Factories Act, WCA, ESI Act.

### **UNIT 2**

Electromagnetic Radiation and its effects on Eye ,Light – Definitions and units, Sources, advantages and disadvantages, standards ,Color – Definition, Color theory, Color coding, Color defects, Color Vision tests

### **UNIT 3**

Occupational hazards and preventive/protective methods ,Task Analysis

### **UNIT 4**

Industrial Vision Screening – Modified clinical method and Industrial Vision test

Vision Standards – Railways, Roadways, Airlines

Visual Display Units • Contact lens and work

## **PRACTICALS:**

### **BVOPTP-601-PRACTICAL-Contact Lens – II**

- Examination of old soft Lens
- RGP Lens fitting
- RGP Lens Fit Assessment and fluroscein pattern
- Special RGP fitting (Aphakia, pseudo phakia&Keratoconus)
- RGP over refraction and Lens flexure
- Examination of old RGP Lens
- RGP Lens parameters
- Fitting Cosmetic Contact Lens
- Slit lamp examination of Contact Lens wearers
- Fitting Toric Contact Lens
- Bandage Contact Lens
- SPM &Pachymetry at SN During Clinics
- Specialty Contact Lens fitting (at SN during clinics)



### **BVOPTP-602-PRACTICAL-Occupational Optometry**

- hygiene and safety
- National bodies etc.
- Factories Act, WCA, ESI Act.
- Electromagnetic Radiation and its effects on Eye ,
- Occupational hazards and preventive/protective methods ,Task Analysis
- Vision Standards – Railways, Roadways, Airlines
- Contact lens and work