Bachelor of Vocation (Optometry Technology)

B.Voc. (Optometry Tech.) Syllabus

I Semester				
S.No.	**Course Code**	**Subject**	**Content Type**	**Credit**
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
	BVOPTP-101	Practical of CourseBVOPT-101	Skill	2
	BVOPTP-102	Practical of CourseBVOPT-102	Skill	2
	BVOPTP-103	Practical of CourseBVOPT-103	Skill	2
	BVOPTP-104	Practical of CourseBVOPT-104	Skill	2
	BVOPTP-105	Practical of CourseBVOPT-105	Skill	2

BVOPT -101 General Human Anatomy & Physiology

UNIT-1

Anatomy : Introduction to human body , definition of anatomy, planes, position and movement of human body, anatomy of head and neck, cranial cavity, mouth pharynx, nose, pectoral region, shoulder, scapular region, upper and lower limbs ,bones and joints, pericardium and heart, lungs , diaphragm, trachea,esophagus, thoracic duct, brief introduction of skeletal system, organization of skeleton, definition, classification, constituents of bones and bone tissue, growth and development of bones, bones of cranium, electronic microscopic structure of cell, Structure of arteries, veins and capillaries

UNIT-2

Anatomy:Tissue- classification, functions and structure of primary tissues – epithelial tissue, connective tissue, muscular tissue, nervous tissue, function of arteries, veins and capillaries, cardiac cycle and heart sound, factors affecting heart rate and its regulation, physiological variations, factors controlling blood pressure, hemorrhage and shock, disease related to cardiovascular system, definition and classification of muscular tissue, characterization of skeletal, smooth, cardiac muscles, types of cartilage, skeletal, smooth and cardiac muscle.

UNIT-3

Physiology: introduction on physiology, cell-description of cell and its components, functions of cell, homeostasis, basics about different organs and systems, structure and functions of urinary system, organs of urinary system, glomerular filtration, physiology of urine formation, functions of kidney, glomerular filtration rate.

UNIT-4

Physiology: Introduction to blood and its components, functions of RBCs, WBCs and platelets, difference between serum and plasma components and organs of lymphatic system, introduction to reproductive system, structure and functions of male and female reproductive organs, parts of male and female reproductive organs.

BVOPT-102 Biochemistry

UNIT 1

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

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)

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 & amp, 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 Achitecture, 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

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.

Functional Grammar

a) Parts of speech, articles, tenses, verbs and modals.

b) Practice of daily use words, numerals and tongue twisters

c) Vocabulary building, construction of simple sentences: Basic sentence pattern, subject and predicate.

d) Sentence construction – simple, complex and compound English communication-About myself

a) Let's talk, making conversation, meeting and greeting

b) Introduction myself, my family and my friends

c) My opinions, my likes and dislikes

d) Life at collage, hostel and workplace

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 execration 11. Urine formation and execration

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).