Curriculum Outline

First Semester

Sl. No.	Course Titles	Hours/semester		
		Lecture	**Practicals**	**Total**
BOP101	General Anatomy	45	15	60
BOP102	General Physiology	45	15	60
BOP103	General Biochemistry	45	15	60
BOP104	Physical Optics	45	15	60
BOP105	Mathematics & Geometrical Optics-I	45	15	60
BOP106	Introduction to Optometry[#]	30	0	30
BOP107	Nutrition[#]	15	0	15
BOP108	Communication[#]	15	60	45
BOP109	Clinical Optometry I	0	30	60
TOTAL		**285**	**165**	**450**

Non-university exams

First Semester

GENERAL ANATOMY

CL	CP	L	P
3	0.5	45	15

INSTRUCTOR IN CHARGE: MD Anatomy, M Sc Anatomy or M Optom with experience in handling Anatomy.

COURSE DESCRIPTION: General anatomy deals with the entire human anatomy with emphasis on different tissues, blood vessels, glands, nerves and the entire central nervous system in particular.

OBJECTIVES: At the end of the semester, the student should be able to:

1. Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of various structures in the human body.

2. Identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions.

3. Comprehend the basic structure and connections between the various parts of the central nervous system so as to analyze the integrative and regulative functions on the organs and systems.

TEXT BOOKS:-

1. B.D. CHAURASIA: Handbook of General Anatomy, 2nd Ed., CBS Publishers and Distributors, New Delhi - 110 032.
2. Inderbir Singh's text book of Anatomy -3 volumes 7th Edition

REFERENCE BOOKS:-

1. PETER L. WILLIAMS AND ROGER WARWICK: - Gray's Anatomy - Descriptive and Applied, 36th Ed., 1980, Churchill Livingstone.

2. T.S. RANGANATHAN: Text book of Human Anatomy, 1982, S. Chand & Co., New Delhi 110 055.

3. INDERBIR SINGH: Human Embryology, 3rd Ed., Macmillan India, 1981.

4. R. KANAGASUNTHARAM, P. SIVANANDA-SINGHAM & A. KRISHNAMURTI: Anatomy- Regional, Functional, & Clinical, P.G. Publisher, Singapore 1987.

PREREQUISITES: Higher secondary level biology or remedial biology

COURSE PLAN:

Unit	Topic	Hours
1	Introduction to Human Anatomy: Anatomy: Definition and its relevance in medicine and optometry Planes of the body, relationship of structures, organ system Skeletal System	9
2	Tissues of the Body: Epithelium, connective tissue, bone and cartilage, Embryology, histology, different types of each of them, types of cells, cellular differentiation and arrangements in different tissues Muscles: Different types of muscles, their functional differentiation, their relationship with different structures, their neural supply	9
3	Blood vessels: Differentiation between arteries and veins, embryology, histology of both arteries and veins, Functional differences between the two, anatomical differences at different locations Lymphatic system: Embryology, functions, relationship with blood vessels and organs	9
4	Skin and appendages: Embryology, anatomical differences in different areas, functional and protective variations, innervations, relationship with muscles and nerves Glands: Embryology, different types of glands (exocrine and endocrine), functional differences, neural control of glands	9
5	Nervous system: Parts of Nervous system, cell types of nervous system, Blood-brain barrier, Reflex arc, Peripheral Nerves, Spinal nerves, Nerve fibers, Autonomic Nervous system Brain and Cranial nerves: Major parts of Brain, Protective coverings of the Brain, Cerebrospinal Fluid, Brain stem, Cerebellum, Diencephalon, Cerebrum, Cranial nerves	9

PRACTICAL: Practical demonstration of each organ using specimen. If specimen for certain organs are not available, then videos can be shown to make the student understand the anatomic structures.

CL	CP	L	P
3	0.5	45	15

GENERAL PHYSIOLOGY

INSTRUCTOR IN CHARGE: MD Physiology, MSc Physiology or M Optom with experience in handling Physiology

COURSE DESCRIPTION: General physiology deals with the entire human anatomy with emphasis on different organ systems, their physiological functions with special emphasis on blood and neurophysiology.

OBJECTIVES: At the end of the course the student will be able to: • Explain the normal functioning of various organ systems of the body and their interactions. • Elucidate the physiological aspects of normal growth and development. • Describe the physiological response and adaptations to environmental stresses. • Know the physiological principles underlying pathogenesis of disease.

TEXT BOOKS: -

1. Human physiology - C C Chatterjee 14th edition 2 volumes
2. Essentials of human physiology - K Sembulimgam 8th edition

REFERENCE BOOKS:-

1. A C Guyton: Text book of Medical Physiology, 8th edition, saunders company, Japan,

2. G J Tortora, B Derrickson: Principles of anatomy & physiology,11th edition, Harper & Row Publishers, New York

3. John Wiley & Sons Inc, New Jersey, 2007

PREREQUISITES: Higher secondary level biology or remedial biology

COURSE PLAN:

Unit	Topics	Hours
1	Cell structure & organization Tissue organization, Epithelium, Connective tissue –Collagen fibers –Elastic fibers –Areolar fibers, Cartilage –Bone, Contractile tissue –striated –skeletal –cardiac –non striated –plain –myoepithelial, General principles of cell physiology, Physiology of skeletal muscle	7
2	Blood: Composition, Volume measurement & variations, Plasma proteins –classification & functions, Red blood cells –development, morphology & measurements –functions & dysfunctions., White blood cells –development –classification, morphology –functions & dysfunctions, Platelets –morphology –development, functions & dysfunctions, Clotting –factors –mechanism –anti- coagulants dysfunctions, Blood grouping –classification –importance in transfusion, Rh factor & incompatibility, Suspension stability, Osmotic stability, Reticulo endothelial system: Spleen,lymphatic tissue, Thymus, bone marrow, immune system, cellular, Humoral, Autoimmune system	9
3	Digestion: General arrangement, functions & regulations: Salivary digestion, Gastric digestion, Pancreatic digestion, Intestinal digestion, Liver & bile, Absorption, Motility, Deglutition, Vomiting-Defecation-Functions of large intestine-Neurohumoral regulations of alimentary functions Excretion: Body fluids –distribution, measurement & exchange, Kidney –structure of nephron –mechanism of urine formation –composition of the urine and abnormal constituents –urinary bladder & micturition	9

4	Endocrines: Hormone mechanism –negative feed backs –tropic action –permissive action –cellular action, hypothalamic regulation, hormones, actions, regulations: Thyroid , Adrenal cortex, Adrenal medulla, Parathyroid, Islets of pancreas, Miscellaneous, Common clinical disorders Reproduction: Male reproductive system –control & regulation , Female reproductive system –uterus –ovaries –menstrual cycle –regulation –pregnancy & delivery –breast –family planning Respiration: Mechanics of respiration –pulmonary function tests –transport of respiratory gases- neural and chemical regulation of respiration –hypoxia, cyanosis, dyspnoea–asphyxia.	10
5	Circulation: General principles Heart: myocardium –innervation –transmission of cardiac impulse- Events during cardiac cycle –cardiac output. Peripheral circulation: peripheral resistances –arterial blood pressure –measurements –factors regulation variations –capillary circulation –venous circulation. Special circulation: coronary cerebral –miscellaneous Nervous system: Neuron –Conduction of impulse –synapse –receptor, Sensory organization –pathways and perception, Reflexes –cerebral cortex –functions, Thalamus –Basal ganglia, Cerebellum., Hypothalamus, Autonomic nervous system –motor control of movements, posture and equilibrium, conditioned reflex, eye hand co-ordination, Special senses –(Elementary) Olfaction –Taste –Hearing	10

PRACTICAL*:

1. Blood test: Microscope, Haemocytometer, Blood, RBC count, Hb, WBC count, Differential Count, Haematocrit demonstration, ESR, Blood group & Rh. type, Bleeding time and clotting time

2. Digestion: Test salivary digestions

3. Excretion: Examination of Urine, Specific gravity, Albumin, Sugar, Microscopic examination for cells and cysts

4. Endocrinology and Reproduction: Dry experiments in the form of cases showing different endocrine disorders.

5. Respiratory System: Clinical examination of respiratory system, Spirometry, Breath holding test

6. Cardio Vascular System: Clinical examination of circulatory system, Measurement of blood pressure and pulse rate, Effect of exercise on blood pressure and pulse rate

7. Central Nervous System: Sensory system, Motor system, Cranial system, Superficial and deep reflexes

*Videos can be shown to make the student understand the functions

GENERAL BIOCHEMISTRY

CL	CP	L	P
3	0.5	45	15

INSTRUCTOR IN CHARGE: Ph D or MD in biochemistry with adequate exposure to the profession of optometry or M Optom with experience in handling Biochemistry

COURSE DESCRIPTION: This course will be taught in two consecutive semesters. General Biochemistry deals with the biochemical nature of carbohydrates, proteins, minerals, vitamins, lipids etc. A detailed study of these, emphasizing on their chemical composition and their role in metabolism is the required aim of this course.

OBJECTIVES: At the end of the course, the student should be able to: demonstrate his knowledge and understanding on:

1. Structure, function and interrelationship of biomolecules and consequences of deviation from normal.

2. Integration of the various aspects of metabolism, and their regulatory pathways.

3. Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation of a given data.

TEXT BOOK:

1. Essentials of biochemistry - Shivananda Nayak 3rd edition

2. Textbook of biochemistry for medical students - D M Vasudevan 8th edition

REFERENCE BOOKS:

1. S. Ramakrishnan, K G Prasannan and R Rajan: Text book of Medical Biochemistry, Orient Longman, Madras, 1990

2. D.R. Whikehart: Biochemistry of the Eye, 2ndedition, Butterworth Heinemann, Pennsylvania, 2003

PREREQUISITES: Higher secondary level chemistry with good knowledge of organic chemistry.

COURSE PLAN

Unit	Topics	Hours
1	Amino acids - classification, symbols, structures and properties - Proteins – primary structure, secondary structure, tertiary structure and quaternary structure - examples with biological functions Carbohydrates - classification, structure and functions of mono-, di-, oligo- and polysaccharides - Glycoconjugates - proteoglycans, glycoproteins and glycolipids Lipids - structure and functions of fatty acids, triacylglycerols, phospholipids and glycolipids	9
2	Enzyme nomenclature - derivation of Michaelis-Menten equation, significance and its limitations, Lineweaver-Burk equation and its plot - factors affecting the rate of enzymatic reactions - enzyme regulation - covalent modification, allosteric modification, positive and negative co-operativity - enzyme inhibition - reversible and irreversible inhibitions. Mechanism of enzyme catalysis - proximity effect, general acid-base reaction, electrostatic interaction, etc., that recurs in enzyme reactions; mechanism of action of chymotrypsin, lysozyme, ribonuclease-A and carboxypeptidase	9
3	Carbohydrate metabolism - glycolysis (aerobic and anaerobic), feeder pathways of glycolysis, gluconeogenesis, glycogenolysis, glycogenesis, pyruvate oxidation, TCA cycle, glyoxylate cycle and pentose phosphate pathway - pathway, control and energetics Nucleic acids metabolism - Purines and Pyrimidines- synthesis, degradation and its control	9

4	Amino acids metabolism - transamination, oxidative deamination, urea cycle, breakdown of amino acids leading to pyruvate, acetyl CoA, α-ketoglutarate and succinyl CoA – lipids metabolism - fatty acids, phospholipids and cholesterol - synthesis, degradation and its control	9
5	Electron transport chain and its complexes; oxidative phosphorylation: chemiosmotic theory; proton motive force, ATP synthesis - rotational catalysis; uncouplers of oxidative phosphorylation; control of ATP production	9

PRACTICALS

- Estimation of amino acid by Formol titration
- Estimation of starch by Anthrone method
- Estimation of protein by Lowry's method from germinating seeds
- Estimation of cholesterol by Zak's method
- Estimation of amino acid by Ninhydrin method from germinating seeds
- Estimation of ascorbic acid
- Estimation of Urea by DAM-TSC method
- Determination of enzyme activity – AST
- Determination of enzyme activity – ALT
- Identification of amino acids by descending paper chromatography
- Identification of sugars by TLC
- Demonstration
- Estimation of blood cholesterol
- Estimation of alkaline phosphatase.
- Salivary amylase (effect of PH, etc)

CL	CP	L	P
3	0.5	45	15

PHYSICAL OPTICS

INSTRUCTOR IN CHARGE: A post-graduate, preferably a Ph D, in physics, with adequate exposure to the profession of optometry as evidenced by previous teaching experience or publications in optometry journals/magazines Or M Optom/ Ph D in Optometry with experience in handling Optics

COURSE DESCRIPTION: This course will be taught in one semester. Physical Optics is the study of light, its properties and its interaction with matter. Specifically, the phenomena of interference, diffraction, polarization and scattering will be dealt with in detail.

OBJECTIVES: The objective of this course is to equip the students with a thorough knowledge of properties of light. At the end of this course, students will be able to predict the distribution of light under various conditions.

TEXT BOOK: Keating NM. P, Geometric, Physical and Visual Optics, Butterworth-Heinemann, Massachusetts, USA, 2002.

REFERENCE BOOKS:

1. Pedrotti L. S, Pedrotti Sr. F. L, Optics and Vision, Prentice Hall, New Jersey, USA, 1998.

2. Keating NM. P, Geometric, Physical and Visual Optics, Butterworth- Heinemann, Massachusetts, USA, 2002.

3.

PREREQUISITES: Higher secondary level mathematics and physics.

COURSE PLAN

Unit	Topics	Hours
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, Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and efficacy curves; photometric units. Inverse square law of photometry; Lambert's law. Other units of light measurement; retinal illumination; Trolands	9
2	INTERFERENCE: Interference of Light – Principle of Super Position - Coherence, Coherent, sources, Constructive interference, Destructive interference - Young's double slit Experiment– band width – Colors of Thin Films – Newton's Rings – Determination of Wavelength – Air wedge - Determination of diameter of a thin wire by air wedge Michelson's Interferometer and its Applications.	9

3	DIFFRACTION: Fresnel's Diffraction – Zone Plate and a Convex Lens – Diffraction at Circular aperture, Opaque circular disc, Straight edge and Narrow wire -. Fraunhofer's Diffraction – Diffraction at a Slit, Circular Aperture and Disc – Theory of Plane Transmission Grating. Resolution of Images – Rayleigh's Criterion – Resolving Power of Telescope, Microscopes, Prisms and Grating.. Scattering; Raleigh's scattering; Tyndall effect.	9
4	POLARIZATION: Double Refraction – Brewster's Law – Nicol Prism –- polarizer and analyzer - Huygens Explanation of double refraction – Elliptically & Circularly polarized light – Quarter Wave and Half Wave Plates - Polaroids and their uses -Optical Activity –Fresnel's Explanation – Bi quartz Polarimeter – Determination of Specific Rotatory Power using Half Shade Polarimeter. Fluorescence and Phosphorescence- Introduction to Fluorescence and Phosphorescence, Applications of Fluorescence	9
5	LASERS: Introduction –Basic Principle of LASER – spontaneous and stimulated emission, Coherence –Population Inversion – Different Types of Pumping –Systems – characteristics of LASER . Types of Laser: He-Ne Laser – Nd-YAG laser – CO2Laser – Semiconductor Laser - 3-D Profiling Using Lasers – Applications of Laser in Field of Medicine – ophthalmic applications.	9

PRACTICALS

The practical to be done include the following:

- Determination of Refractive Index of the given Liquid – Newton's Ring
- Refractive Index of Hollow Prism
- Small Angle Prism
- Resolving Power of Prism
- Polarimeter - Specific Rotation
- Diffraction using Single Slit and Double Slit - determine its width.
- Determination of Wavelength of He-Ne - Laser Grating
- Michelson's Interferometer - determine the wavelength
- Circular Aperture - Airy disk, dependence of disk diameter on aperture size
- Verification of Malus' Law using a polarizer – analyzer combination
- Thickness of thin glass plate Michelson'sInterferometer
- Photometry of Images: Verification of Inverse Square Law; Effect of aperture size on image illuminance

MATHEMATICS & GEOMETRICAL OPTICS-I

CL	CP	L	P
3	0.5	45	15

INSTRUCTOR IN CHARGE:

Mathematics: A post-graduate, preferably a PhD, in mathematics, with adequate exposure to the profession of optometry as evidenced by previous teaching experience or publications in optometry journals/magazines OR M Optom/Ph D in Optometry with experience in handling mathematics and optics

Geometrical optics: A post-graduate, preferably a Ph D, in physics, with adequate exposure to the profession of optometry as evidenced by previous teaching experience or publications in optometry journals/magazines OR An optometrist with a post-graduate degree, preferably a Ph D OR An optometrist with an undergraduate degree

COURSE DESCRIPTION:

Mathematics deals with the basics that are necessary for understanding the concepts of vision. Geometric Optics is the study of light and its behavior as it propagates in a variety of media. Specifically, the phenomena of reflection and refraction of light at boundaries between media and subsequent image formation will be dealt with in detail. Reflections at plane and spherical surfaces and refractions at plane, spherical, cylindrical and toric surfaces will be studied in this course. Attention will be given to the system of surfaces and/or lenses and their imaging properties. The effect of aperture stops on the quality of images, such as blur and aberrations, depth of field and depth of focus, will also be studied

OBJECTIVE:

The objective of the mathematics units is to introduce the basic principles of mathematics involved in optometry, optics and other applied diagnostic divisions of optometry. The objective of the geometric optics units is to equip the students with a thorough knowledge of mirrors and lenses. At the end of this course, students will be able to predict the basic properties of the images formed on the retina by the optics of the eye.

TEXT BOOK:

1. Pedrotti L. S, Pedrotti Sr. F. L, Optics and Vision, Prentice Hall, New Jersey, USA, 1998.

2. B. S. Grewal, Higher Engineering Mathematics, 43/e, Khanna Publishers, 2014.

REFERENCE BOOKS:

1. Loshin D. S. The Geometric Optics Workbook, Butterworth-Heinemann, Boston, USA, 1991.

2. Schwartz S. H. Geometrical and Visual Optics: A Clinical Introduction, McGraw-Hill, New York, USA, 2002.

Course plan:

Unit	Topic	Hours
1	Trigonometry: Complex numbers, DeMoivre's Theorem and important deductions, Trigonometric and exponential forms of complex numbers and applications. Expansion of sinq, cosq and tanq in terms of q. Algebra: Combinations; Binomial theorem for any index	9
2	Definition of scalars, vectors and matrices. Addition and subtraction of vectors and matrices; vector norm and matrix determinants. Dot and cross products; angle between vectors. Multiplication of two matrices. Inverse of matrices; solution of simultaneous linear equations using matrices. Concepts of groups, rings and vector spaces. Definition of linearity and applications	9
3	Wavefronts–spherical, elliptical and plane; Curvature and vergence; rays; convergence and divergence in terms of rays and vergence; vergence at a distance. Refractive index; its dependence on wavelength. Fermat's and Huygen's Principle –Derivation of laws of reflection and refraction (Snell's law) from these principles	9
4	Plane mirrors –height of the mirror; rotation of the mirror, Reflection by a spherical mirror –paraxial approximation; sign convention; derivation of vergence equation, Imaging by concave mirror, convex mirror, Reflectivity; transmissivity; Snell's Law, Refraction at a plane surface, Glass slab; displacement without deviation; displacement without dispersion	9
5	Thick prisms; angle of prism; deviation produced by a prism; refractive index of the prism, angular dispersion; dispersive power; Abbe's number, Definition of crown and flint glasses; materials of high refractive index, Thin prism –definition; definition of Prism diopter; deviation produced by a thin prism; it dependence on refractive index	9

PRACTICALS

- Thick Prism – determination of prism angle and dispersive power; calculation of the refractive index
- Thin Prism – measurement of deviation; calculation of the prism dioptre
- Fresnel's Biprism - determine the wavelength of a monochromatic light source
- Refractive Index of Solid Prism
- Image formation by spherical mirrors.

CL	CP	L	P
2	0	30	0

INTRODUCTION TO OPTOMETRY

INSTRUCTOR IN CHARGE: M Optom in Optometry with experience in teaching basic or core optometry courses.

COURSE DESCRIPTION: This course aims to orient the students with basic concepts of optometry, highlighting its role and importance in comprehensive ocular evaluation

OBJECTIVES:

1. This course provides the students with basic knowledge on optometry, its disciplines, and its importance in enabling comprehensive ocular evaluation

2. The course introduces the various roles that optometrists can play in terms of clinical, community, academic and research services and how different courses in the curriculum enable them towards achieving this objective

TEXT BOOK: J. Boyd Eskridge, John F. Amos, Jimmy D. Bartlett, Clinical Procedures in Optometry

COURSE PLAN:

Unit	Topic	Hours
1	Introduction to optometry, Definition, Rights and Responsibilities Integration of basic sciences and support courses to Optometry Role of optometry in comprehensive eye care.	10
2	Introduction to Primary eye care, Blindness, Vision impairment, Refractive errors, common ocular diseases like cataract, diabetic retinopathy, glaucoma Disciplines in Optometry: Binocular vision, Contact lens, Low vision care, Occupational optometry and Sports Optometry etc.	10
3	Background of the profession: Allied and Health care Profession, Systems and streams of different professions and the position of optometry Evolution of optometry in India Global practice trends of optometry What does it take to become a healthcare professional?	10

NUTRITION

CL	CP	L	P
1	0	15	0

INSTRUCTOR IN CHARGE: Nutritionist with Masters/ Doctorate

COURSE DESCRIPTION: This course covers the basic aspects of Nutrition for good health. It also includes nutrients and nutrient derivatives relevant to ocular health, nutrition deficiency and ocular disease, Nutrition and ocular aging, and contraindications, adverse reactions and ocular nutritional supplements.

OBJECTIVES: At the end of the course student would have gained the knowledge of the following: Balanced diet. • Protein, carbohydrates, vitamins, Minerals, carotenoids and eye. • Nutrition and Ocular aging • Adverse effects of ocular nutritional supplements.

TEXT BOOK:

1. Textbook on nutrition and dietetics - Clement I 1st edition.

REFERENCE BOOKS:

1. M Swaminathan: Hand book of Food and Nutrition, fifth edition, Bangalore printing & publishing Co.Ltd, Bangalore, 2004

2. C Gopalan, BV Rama Sastri, SC Balasubramanian: Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR, Hyderabad,2004

PREREQUISITES: Nil

COURSE PLAN

Unit	Topic	Hours
1	Introduction: Food groups, RDA, Balanced diet, diet planning. Assessment of nutritional status. Energy: Units of energy, Measurements of energy and value of food, Energy expenditure. Total energy/calorie requirement for different age groups and diseases. Satiety value, Energy imbalance- obesity, starvation. Limitations of the daily food guide. Nutrients and Nutrient derivatives relevant to ocular health: Proteins, Lipids, carbohydrates, vitamins, minerals and trace elements, carotenoids, oxidative stress and the eye.	5
2	Nutrition deficiency and ocular disease: Vitamin A deficiency, Vitamin C deficiency and ocular disease, Vitamin E deficiency, retinitis pigmentosa.	5
3	Nutrition and Ocular Senescence: Nutrition and malnutrition in older people, Dry eye disorders, Glaucoma, Cataract, and Age-related macular degeneration. Contraindications, adverse reactions and ocular nutritional supplements. Recent Advance in research into nutrition related eye health: Age related eye disease study (AREDS), Carotenoids in Age related eye disease study (CAREDS),	5

COMMUNICATION

CL	CP	L	P
1	2	15	60

INSTRUCTOR IN CHARGE PhD/ Masters in the field of communication preferable.

COURSE DESCRIPTION: This course deals with essential functional English aspects and nuances of the communication skills essential for the health care professionals.

OBJECTIVES:

1. This course trains the students in oral presentations, expository writing, logical organization and structural support.

2. By acquiring skills in the use of communication techniques the students will be able to express better, grow personally and professionally, develop poise and confidence and achieve success.

TEXT BOOK:

1. Graham Lock, Functional English Grammar: Introduction to second Language Teachers. Cambridge University Press, New York, 1996.

2. Gwen Van Servellen. Communication for Health care professionals: Concepts, practice and evidence, Jones & Bartlett Publications, USA, 2009

REFERENCE BOOKS: Faculty may decide.

PREREQUISITES: Basic English-speaking writing comprehension skills

COURSE PLAN

Unit	Topics	Hours
1	Vocabulary, Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words, Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms. Letter Writing, Email, Essay, Articles, Memos, one word substitutes, note making and Comprehension, Summary writing, Creative writing, newspaper reading. Importance of speaking efficiently, Voice culture, Preparation of speech. Secrets of good delivery, Audience psychology, handling	5
2	Communication process, Elements of communication, Barriers of communication and how to overcome them. Nuances for communicating with patients and their attenders in hospitals.	5
3	Listening Process, Barriers to Listening, Types of Listening, Importance of listening, Good and persuasive listening, Characteristics of a good listener. Efficient and fast reading, Awareness of existing reading habits, Tested techniques for improving speed, Improving concentration and comprehension through systematic study. Basics of non-verbal communication , Rapport building skills using neuro- linguistic programming (NLP)	5

PRACTICALS

- Listening comprehension
- Listening and Note-taking
- Training in Listening
- Professional speaking
- Audience Analysis
- Organizing a speech
- Delivering a speech: Presentation Strategies
- Interview Techniques
- Group Discussion
- Professional writing
- Trans-coding -- from verbal to visual & from visual to verbal
- Editing, Proof reading, Referencing

- Proposals
- User manual and Product description
- Reports – feasibility, market survey, project
- Conference paper/journal article writing in IMRAD Format
- Memos and E-mails
- Advertisement Writing
- Scenarios in Optometric Practice (Role play)
- As Clinician
- As Patient
- As Parent/ attendant
- Non-verbal communication

CL	CP	L	P
0	1	0	30

CLINICAL OPTOMETRY I

INSTRUCTOR IN CHARGE: M Optom with experience in teaching basic or core optometry courses

COURSE DESCRIPTION: This course deals with introducing the students to the optometric clinical rotations in a clinic or a hospital.

OBJECTIVES:

The objective is to introduce the student to the working of a clinic/ hospital

To introduce different departments in a hospital/ non-optometry services in a clinic

TEXT BOOK: Faculty to decide

REFERENCE BOOKS: Relevant Hospital Administrative Manuals (Faculty may decide)

COURSE PLAN

Practicals:

1. Observe the basic operations of the optometry clinic while interacting with the team members involved in providing optimal care to patients.

2. Setting up of an optometric work up room

3. Introduction to relevant terminologies, equipment and techniques used for treatment.

4. Tour the hospital and get to know other departments in a tertiary eye care hospital and provide a report on the observation

5. Coverage on the process of the clinic/ hospital, creating and maintaining medical records (electronic),

6. Processes and guidelines in the Human resources department during the studentship along with the roles and responsibilities of the students,

7. Observation in clinical and non-clinical processes of the Optometry/ Opticals Department. Depending on the availability of the other departments like Disposals of the medical and non- medical waste in the system, Department of Bioengineering, Patient services, eye banks, multimedia/ Web development etc observations can be encouraged.

8. Basic Life Support Skills Training

9. Observation at the Hospital infection control and Safety and the Quality Control System

10. Training on basic clinical protocol for community outreach