



Programme Structure

Sharda School of Allied Health Sciences

Bachelor of Optometry

Programme code: SAH0121

Batch: 2023-2027



Programme Structure
Sharda School of Allied Health Sciences
Bachelor of Optometry
Batch: 2023-2027
TERM: I

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course ¹ : 1. CC 2. AECC 3. SEC 4. DSE
				L	T	P			
THEORY SUBJECTS									
1.	35021	BOP 105	General Anatomy	3	1	-	4	Core	CC
2.	35022	BOP 106	General Physiology	3	1	-	4	Core	CC
3.		BOC 101	Basic Biochemistry – I	2	1	-	3	Core	CC
4.	35024	BOP 108	Physical Optics	2	1	-	3	Core	CC
5.	35025	BOP 109	Geometrical Optics-I	4	1	-	5	Core	CC
6.		ARP 101	Communicative English –I	2	-	-	2	Core	AEC
Practical/Viva-Voce/Jury									
7.	35026	BOP 001	Optometric Procedures – I	-	-	4	2	Core	CC
8.	35027	BOP 155	General Anatomy(LAB)	-	-	2	1	Core	CC
9.		HPY 151	Human Physiology(LAB)	-	-	2	1	Core	CC
10.		BOC 151	Basic Biochemistry – I(LAB)	-	-	2	1	Core	CC
11.	35030	BOP 158	Physical Optics(LAB)	-	-	2	1	Core	CC
TOTAL CREDITS							26		

¹ CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



Programme Structure
Sharda School of Allied Health Sciences
Bachelor of Optometry
Batch: 2023-2027
TERM: II

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course ² : 5. CC 6. AECC 7. SEC 8. DSE
				L	T	P			
THEORY SUBJECTS									
1.	35075	BOC 201	Basic Biochemistry – II	2	1	-	3	Core	CC
2.	35076	BOP111	Ocular Anatomy	3	1	-	4	Core	CC
3.	35077	BOP112	Ocular Physiology	3	1	-	4	Core	CC
4.	35078	BOP113	Geometrical Optics – II	3	1	-	4	Core	CC
5.		ARP 102	Communicative English II	2	-	-	2	Core	AEC
6.		OPE	Open Elective course	2	-	-	2	Elective	SEC
Practical/Viva-Voce/Jury									
6.	35080	BOP002	Clinical Optometry- II	-	-	4	2	Co-Requisite	CC
7.		BOC 251	Basic Biochemistry – II(Lab)	-	-	2	1	Core	CC
8.	35082	BOP160	Ocular Anatomy(Lab)	-	-	2	1	Core	CC
9.	35083	BOP161	Ocular Physiology(Lab)	-	-	2	1	Core	CC
10.	35084	BOP162	Geometrical Optics – II(Lab)	-	-	2	1	Core	CC
TOTAL CREDITS							25		

² CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



Programme Structure
Sharda School of Allied Health Sciences
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Batch: 2023-2027
TERM: III

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course3: 9. CC 10. AECC 11. SEC 12. DSE
				L	T	P			
THEORY SUBJECTS									
1.	35102	BOP206	Applied Optics – I	3	1	-	4	Core	CC
2.	35103	BOP207	Visual Optics – I (Visual Perception & Neurophysiology)	3	1	-	4	Core	CC
3.	35104	BOP208	Ocular Diseases – I	3	1	-	4	Core	CC
4.	35105	BOP209	Microbiology	2	-	-	2	Core	CC
5.	35106	BOP210	Pathology	2	-	-	2	Core	AECC
Practical/Viva-Voce/Jury									
7.	35107	BOP003	Clinical Optometry-I	-	-	4	4	Core	CC
8.	35108	BOP255	Applied Optics – I(LAB)	-	-	2	1	Core	CC
9.	35109	BOP256	Visual Optics – I (Visual Perception & Neurophysiology) (LAB)	-	-	2	1	Core	CC
10.	35110	BOP257	Ocular Diseases – I (LAB)	-	-	2	1	Core	CC
11.	35111	BOP258	Microbiology (LAB)	-	-	2	1	Core	CC
Total Ceditis							24		

³ CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses



Sharda School of Allied Health Sciences
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Batch: 2023-2027
TERM-IV

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course5: 13. CC 14. AECC 15. SEC 16. DSE
				L	T	P			
THEORY SUBJECTS									
1.	35179	BOP211	Applied Optics – II	3	1	-	4	Core	CC
2.	35180	BOP212	Visual Optics- II	3	1	-	4	Core	CC
3.	35181	BOP213	Basic Pharmacology	2	-	-	2	Core	CC
4.	35182	BOP214	Optometric Instruments	2	-	-	2	Core	CC
5.	35183	BOP215	Ocular Diseases- II	3	1	-	4	Core	CC
6.		OE	Open Elective course	2	-	-	2	Elective	SEC
Practical/Viva-Voce/Jury									
7	35184	BOP004	Clinics- II	-	-	4	2	Core	CC
8	35185	BOP259	Applied Optics – II(Lab)	-	-	2	1	Core	CC
9	35186	BOP260	Visual Optics- II (Lab)	-	-	2	1	Core	CC
10	35187	BOP261	Basic Pharmacology (Lab)	-	-	2	1	Core	CC
11	35188	BOP262	Optometric Instruments (Lab)	-	-	3	1	Core	CC
12		INC001	FSIC	-	-	4	2	Core	SEC
13		CCU108	Community Connect	-	-	4	2	Core	SEC
TOTAL CREDITS							28		



Programme Structure
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TERM: V

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course 17. CC 18. AECC 19. SEC 20.DSE
				L	T	P			
THEORY SUBJECTS									
1.	35241	BOP310	Contact Lens – I	3	1	-	4	Core	CC
2.	35242	BOP311	Low Vision & Rehabilitation	3	1	-	4	Core	CC
3.	35243	BOP312	Public Health, Community & Occupational Optometry	2	-	-	2	Core	CC
4.	35244	BOP313	Binocular Vision – I	3	1	-	4	Core	CC
5.	35934	BOP320	Diseases of the Eye and Clinical Medicine	3	-	-	3	Core	CC
Practical/Viva-Voce/Jury									
6.	35246	BOP005	Clinics-IV	-	-	4	2	Core	CC
7.	35247	BOP355	Contact Lens – I (LAB)	-	-	2	1	Core	CC
8.	35248	BOP356	Low Vision & Rehabilitation (LAB)	-	-	2	1	Core	CC
9.	35249	BOP357	Binocular Vision – I (LAB)	-	-	2	1	Core	CC
10.		RBL001	RBL-1	0	0	4	0	Core	SEC
TOTAL CREDITS							22		



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TERM VI

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course5: 13. CC 14. AECC 15. SEC 16. DSE
				L	T	P			
THEORY SUBJECTS									
1.	35321	BOP315	Contact Lens – II	3	1	-	4	Core	CC
2.	35322	BOP316	Binocular Vision – II	3	1	-	4	Core	CC
3.	35323	BOP317	Geriatric Optometry	2	-	-	2	Core	CC
4.	35324	BOP318	Pediatric Optometry	2	-	-	2	Core	CC
5.	35325	BOP319	Dispensing Optometry	2	1	-	3	Core	CC
6.		OPE	Open Elective course	2	-	-	2	Elective	SEC
7.		RMS001	Research methodology and Statistics	3	-	-	3	CORE	AECC
Practical/Viva-Voce/Jury									
8	35184	BOP006	Clinics- IV	-	-	4	2	Core	CC
9	35185	BOP358	Contact Lens – II (Lab)	-	-	2	1	Core	CC
10	35186	BOP359	Binocular Vision – II (Lab)	-	-	2	1	Core	CC
11	35187	BOP360	Pediatric Optometry (Lab)	-	-	2	1	Core	CC
12	35188	BOP361	Dispensing Optometry (Lab)	-	-	3	1	Core	CC
13		RBL001	RBL 2	-	-	4	0	Core	SEC
TOTAL CREDITS							26		



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TERM: VII

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course ⁴ : 1. CC 2. AECC 3. SEC 4. DSE
				L	T	P			
THEORY SUBJECTS									
1.		BOP401	BOP Internship and project work –I	0	0	30	15	core	SEC
2.		RBL003	RBL 3	0	0	4	2	core	SEC
TOTAL CREDITS							17		

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Programme Structure
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TERM: VIII

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course ⁵ : 5. CC 6. AECC 7. SEC 8. DSE
				L	T	P			
THEORY SUBJECTS									
1		BOP401	BOP Internship and project work –II	0	0	30	15	Core	SEC
2		RBL004	RBL 4	0	0	4	2	Core	SEC
TOTAL CREDITS							17		

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Course Modules of Bachelor of Optometry

Syllabus for Bachelor of Optometry

School: SSAHS		Batch : 2023-2027	
Programme: BOP			
Branch: Optometry		Semester: 1st	
1	Course Code	BOP105	
2	Course Title	General Anatomy	
3	Credits	4	
4	Contact Hours (L-T)	3-1	
	Course Type	Compulsory	
5	Course Objective	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.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the anatomical structure of human body. CO2: Recognizing, Understanding, characterizing, explaining the various anatomical structure of human body. CO3: Identifying, locating and demonstrating the various anatomical structures of human body. CO4: Performing, implementing and applying the concept for better understanding of various anatomical structures of human body CO5: Analyzing, categorizing, comparing and differentiating various anatomical structures of human body. CO6 : Evaluate , understand and applying the various anatomical structures of human body	
7	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.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction to Anatomical terms organization of the human body	
	A	Human Cell structure; Tissues -Definition, Types, characteristics, classification, location, functions and formation	CO1
	B	Membranes and glands - classification and structure	CO1
	C	Applied anatomy	CO1
	Unit 2	The Skeletal System and The Muscular System	
	A	Bones- types, structure, Axial & Appendicular Skeleton, Description of bones; Joints - classification and structure	CO2
	B	Types and structure of muscles; Muscle groups	CO2
	C	Applied anatomy	CO2
	Unit 3	The Nervous System	

	A	Structure of neurons and neuroglial cells; Divisions of nervous system	CO3, CO4, CO6
	B	Structure of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves ;Autonomic Nervous System — sympathetic, parasympathetic	CO3, CO5, CO6
	C	Applied anatomy	CO3
	Unit 4	THORAX	
	A	The Circulatory System: Structure of Heart; Structure of blood vessels — Arterial & Venous System, Circulation: systemic, pulmonary, coronary	CO4, CO5, CO6
	B	Lymphatic system: Lymphatic vessels and lymph, Lymphatic tissues, Thymus gland, Lymph nodes, Spleen, Lymphatic nodules, Applied anatomy	CO4, CO6
	C	The Respiratory System: Structure of the organs of respiration, Applied anatomy	CO4, CO5, CO6
	Unit 5	ABDOMEN AND PELVIS	
	A	The Digestive System: Structure of Alimentary tract and accessory organs of digestion, Applied anatomy	CO4,CO5,CO6
	B	The Reproductive system: Structure of female reproductive organs; Structure of male reproductive organs, Applied anatomy	CO5, CO6
	C	The Excretory System (Urinary): Structure of organs of urinary; System: Kidney, ureters, urinary bladder, urethra, structure of skin; Applied anatomy	CO4, CO5, CO6
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	CO1 CO1 ETE 50%
	Text book/s*	Human Anatomy by Japee brothers	
	Other References	Anatomy and Physiology of human body	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	1	1
CO2	3	2	2	3	3	2	2	1
CO3	3	3	3	2	3	3	2	2
CO4	2	2	2	3	3	3	2	2
CO5	3	3	2	3	2	3	2	2
CO6	2	3	2	2	3	3	3	2
Avg PO attained	2.5	2.66	2.3	2.6	2.83	2.83	2	1.66

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 1st	
1	Course Code	BOP155	
2	Course Title	General Anatomy (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	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.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the anatomical structure of human body. CO2: Recognizing, Understanding, characterizing, explaining the various anatomical structure of human body. CO3: Identifying, locating and demonstrating the various anatomical structures of human body. CO4: Performing, implementing and applying the concept for better understanding of various anatomical structures of human body CO5: Analyzing, categorizing, comparing and differentiating various anatomical structures of human body. CO6 : Evaluate , understand and applying the various anatomical structures of human body.	
7	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.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction to Anatomical terms organization of the human body	
	A	Practical demonstration of cell using specimen or video	CO1
	B	Practical demonstration of tissue using specimen or video	CO1
	C	Practical demonstration of glands using specimen or video	CO1
	Unit 2	The Skeletal System and The Muscular System	
	A	Practical demonstration of bones using specimen or video	CO2
	B	Practical demonstration of joints using specimen or video	CO2
	C	Practical demonstration of muscles using specimen or video	CO2
	Unit 3	The Nervous System	
	A	Practical demonstration of neurons and neuroglial cells	CO3,
	B	Practical demonstration of brain, spinal cord, cranial nerves, spinal nerves, peripheral nerves	CO3
	C	Practical demonstration of Autonomic Nervous System	CO3
	Unit 4	THORAX	

	A	Practical demonstration of circulatory system using specimen or video	CO4, CO6
	B	Practical demonstration of lymphatic system using specimen or video	CO4, CO6
	C	Practical demonstration of respiratory system using specimen or video	CO4, CO6
	Unit 5	ABDOMEN AND PELVIS	
	A	Practical demonstration of digestive system using specimen or video	CO5, CO6
	B	Practical demonstration of reproductive system using specimen or video	CO5
	C	Practical demonstration of excretory system using specimen or video	CO5, CO6
	Mode of examination	Practical	
	Weightage	CA	CO1
	Distribution	25%	CO1
	Text book/s*	Human Anatomy by Japee brothers	
	Other References	Anatomy and Physiology of human body	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	2
CO3	3	3	3	3	1	3	3	3
CO4	3	1	2	3	3	3	3	3
CO5	2	3	3	3	3	3	3	3
CO6	3	3	2	2	1	2	3	2
Avg PO attained	2.66	2.66	2.5	2.83	2.33	2.8	3	2.6

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 1st
1	Course Code	BOP106
2	Course Title	General Physiology
3	Credits	4
4	Contact Hours (L-T)	3-1
	Course Type	Compulsory
5	Course Objective	1. Understanding, characterizing, explaining, identifying and locating physiology of the human body. 2. Identifying and locating the physiological structure of the human body
6	Course Outcomes	CO1: Knowledge: defining, listing and recognizing the physiological structure of the human body CO2: Comprehension: understanding, characterizing, explaining, identifying and locating the physiological structure of the human body. CO3: Application: performing, demonstrating, implementing and applying the concept of general physiology in better understanding in relevance to human eye. CO4: Analysis: analyzing, categorizing, comparing and differentiating the physiological structure of the human body. CO5: Understand & Remember: To understand and remember the proper concept of human body functioning. CO6 : Evaluate , understand and applying the various concept of human body functioning
7	Course Description	The course in Physiology cover the first year is designed to give the students indepth knowledge of fundamental functions of different systems of human body. The major topics to be covered include the following: the cell, muscle & nervous tissue; blood; lymphoid tissues; respiratory system; blood vessels; circulation; heart; gastro intestinal tract; endocrine & Reproductive system, excretory system, central nervous system and special senses.
8	Outline syllabus	
	Unit 1	General physiology ,Blood & CVS
	A	Functions of cell organelles, transport across cell membrane, body fluids ,homeostasis & membrane potential, difference between skeletal, smooth & cardiac muscle
	B	Composition & functions of blood, plasma proteins, Hemoglobin, RBC, WBC & Platelets, Blood Clotting, Blood groups & related applied.
	C	Physiological anatomy and functions of the heart & blood vessels, Cardiac Cycle, Conducting system of heart, Heart sounds & ECG, Blood Pressure & Pulse.
	Unit 2	Respiratory system & Excretory system
	A	Physiological anatomy & functions of respiratory system, Mechanism of breathing , graph of lung volume & capacities, Transport of gases , disorders of respiratory system

	B	Physiological anatomy, structure and functions of excretory system, structure of nephron, formation of Urine & Micturition			CO2
	C	Hypoxia & temperature regulation			CO2
	Unit 3	Digestive System			
	A	Physiological anatomy and functions of GIT, deglutition			CO3
	B	Composition and Functions of Gastric juices ,(saliva, gastric Juice , Bile , Pancreatic juice & Succus Entericus)			CO3
	C	Peristalsis, Digestion and Absorption in GIT			CO3
	Unit 4	Endocrines and Reproductive system			
	A	General principles of endocrinology, Hormones secreted, functions and applied of Pituitary Gland, Thyroid Gland, Parathyroid gland, Adrenal Cortex & Pancreas			CO4
	B	Puberty, Male and Female reproductive Hormones, Spermatogenesis, Ovulation & Menstrual cycle			CO4
	C	Contraceptive measures			CO4
	Unit 5	The Nervous System & Special Senses			
	A	Structure , functions &classification of nerve tissues, NMJ			CO5
	B	Oganization of Nervous system, The Synapse , Physiology of receptor organs for special and general sensation, physiology of reflex Arc, Functions of hypothalamus, thalamus, basal ganglia, cerebrum & cerebellum .Autonomic nervous system, Cerebrospinal Fluid and Blood Brain Barrier			CO5
	C	Taste, Smell, Eye & Ear –structure , functions and applied			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA 25%	MTE 25%	ETE 50%	
	Text book/s*	Human Physiology by Jaypee brothers			
	Other References	Anatomy and Physiology of human body			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	1	1	1	1	3	3	3
CO2	2	2	1	1	1	2	3	3
CO3	3	2	2	1	2	3	2	3
CO4	3	2	2	1	3	2	3	3
CO5	3	2	2	1	2	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.83	2	1.66	1.16	2	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme:		Current Academic Year: 2023-24	
Branch:		Semester: 1	
1	Course Code	New Course code	
2	Course Title	HUMAN PHYSIOLOGY –I (LAB)	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
5	Course Outcomes	CO1: To define the Physiology and its importance CO2: To explain the importance of Compound microscope CO3: To experiment with hemoglobin estimation CO4: To simplify blood group detection CO5: To interpret Total Red Blood Cell Count and total Leucocyte Count CO6: To estimate and interpret ESR and PCV.	
6	Course Description	<ul style="list-style-type: none"> • Study of Compound Microscope • Estimation of Hemoglobin Concentration • Total Red Blood Cell Count. • Total Leucocyte Count. • BT, CT, Blood Group Estimation and Demonstration of ESR & PCV. 	
	Practical's		CO mapping
	Unit 1	Study of Compound Microscope	CO2, CO1
		a. Introduction to the microscope b. Parts of microscope c. Focusing the slide under microscope.	
	Unit 2	Estimation of Hemoglobin Concentration, ESR & PCV	CO3, CO1
		a. Methods of estimating Hb concentration b. Method of estimating ESR c. Demonstration of PCV	
	Unit 3	Total Red Blood Cell Count	CO5, CO1
		a. Briefing of Neubauer chamber b. Preparing the slide for calculating RBC count c. Calculation	

	Unit 4	Total Leucocyte Count							CO5,CO1
		a. Briefing of Neubauer chamber b. Preparing the slide for calculating TLC count c. Calculation							
	Unit 5	Bleeding Time, Clotting Time, Blood Group Estimation							CO6,CO4,CO1
		a. Demonstration of methods of doing Bleeding time. b. Demonstration of methods of doing clotting time c. Demonstration of Blood group estimation							
	Mode of examination	Practical's							
	Weightage Distribution for Practical's	CA	MTE				ETE		
		25%	0%				75%		
	Text book/s*	Textbook: <ul style="list-style-type: none">Manual Of Practical Physiology, AK Jain Reference: <ul style="list-style-type: none">Ghai's A Textbook of Practical Physiology							
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3
CO1	2	1	3	2	-	-	2	2	2
CO2	1	-	-	3	1	1	2	2	2
CO3	2	2	2	2	-	-	2	2	2
CO4	2	2	2	2	1	1	2	2	2
CO5	2	2	2	2	-	-	2	2	2
COCO6	2	2	2	2	-	-	2	2	2
Average PO attainment	1.8	1.5	1.8	2.2	0.3	0.3	2	2	2

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 1st	
1	Course Code	BOC 101	
2	Course Title	Basic Biochemistry-I	
3	Credits	3	
4	Contact Hours (L-T-P)	2-1-0	
	Course Type	Compulsory	
5	Course Objective	<ul style="list-style-type: none"> To train the students in the management of medical laboratory along with handling a variety of laboratory chemicals and instruments including electronic and advanced equipment's used in modern medical laboratories. To make the students able to do routine laboratory testing under stipulated conditions. To prepare specimens and operate machines that automatically analyse samples. To provide the conceptual basis for understanding biochemical and particularly address the fundamental mechanisms of the biomolecules to facilitate the life. To develop diagnostic skills in clinical biochemistry and to provide an advanced understanding of the core principles and topics of Biochemistry and their experimental basis. 	
6	Course Outcomes	CO1: Student are able to know the importance of sampling techniques CO2: Student are able to develop the understanding about the importance of different types of glassware's CO3: Student are able to build the ability to understand the importance of different types of equipment's CO4: Student are able to develop the importance of acid, base and buffer CO5: Student are able to develop the understanding about the importance of chemistry of biomolecules CO6:: Student are able to build the ability to understand the function of biomolecules in the biological system	
7	Course Description	<ul style="list-style-type: none"> Introduction of Glasswares Introduction of Laboratory Equipments Safety of measurements in Laboratory, Sampling technique and its preservation Preparation of Solutions Acid, Base and Indicators Nutrition Carbohydrate Chemistry Lipid Chemistry 	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction of Glasswares and laboratory equipments	CO1
		a. Pipettes, Burettes, Beakers, Petri dishes, depression plates; Flasks - different types ;	

		Volumetric, round bottomed, Erlenmeyer conical etc. b. Water bath: Use, care and maintenance. Oven & Incubators. c. Refrigerators, cold box, deep freezers. Colorimeter and spectrophotometer.	
	Unit 2	Safety of measurements in Laboratory, Sampling technique and its preservation	CO2
		a. Different types of samples such as urine, blood, stool, tissue etc and various techniques to preserve the samples. b. Preparation of percentage and normal solution. c. Preparation of molar and molal solution.	
	Unit 3	Acid, Base, Indicators and Nutrition	CO3
		a. Acid- base indicators: Definition, concept, mechanism of action. b. Importance of nutrition: Calorific values, Respiratory quotient, Energy requirement of a person - Basal metabolic rate. c. Balanced diet, recommended dietary allowances, Role of carbohydrates, lipid and protein in diet.	
	Unit 4	Carbohydrate Chemistry	CO4
		a. Definition, general classification with examples. b. Glycosidic bond, Structures, composition, sources, properties and functions of Monosaccharides and Disaccharides. c. Structures, composition, sources, properties and functions of Oligosaccharides and Polysaccharides.	
	Unit 5	Lipid Chemistry	CO5
		a. Definition, classification, properties and functions of Fatty acids. b. Triacylglycerol and Phospholipids. c. Cholesterol, Essential fatty acids and their importance, Lipoprotein.	
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
			ETE 50%
	Text book/s*	1) A text book of Medical Biochemistry by Chatterjee & Shinde 2) Text book of biochemistry for Medical students by Vasudevan and Sreekumari 3) Biochemistry by Lehninger 4) Clinical chemistry by Varley 5) Harpers Illustrated Biochemistry by Robert K.M.	
	Other References		

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3
CO2	3	2	2	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	2	3
CO5	3	3	3	3	2	3	3	3
CO6	3	3	3	3	2	3	3	3
Avg PO attained	3.00	2.83	2.83	3.00	2.67	2.83	2.67	3.00

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 1st	
1	Course Code	BOC 151	
2	Course Title	Basic Biochemistry-I (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Understanding, characterising, explaining, identifying and locating the biochemical present, analysing, categorising, comparing and differentiating the biochemical present in the human body.	
6	Course Outcomes	CO1: Student are able to know the importance of sampling techniques CO2: Student are able to develop the understanding about the importance of different types of glass wares CO3: Students are able to build the ability to understand the importance of different types of equipment's CO4: Student are able to know the importance of acid and base CO5: Student are able to develop the understanding about the importance of buffers CO6: Students are able to build the ability to understand the properties of different types of reagents	
7	Course Description	<ul style="list-style-type: none"> • Introduction of Glassware's • Introduction of Laboratory Equipment's • Safety of measurements in Laboratory, • Preparation of Solutions • Determination of strength of acids and bases 	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction to Laboratory apparatus	
	A	a. Introduction to Laboratory apparatus -1	CO1
	B	b. Introduction to Laboratory apparatus -2	
	C	c. Maintenance of Laboratory apparatus	
	Unit 2	Introduction to Laboratory glasswares	
	A	a. Introduction to Laboratory glassware's -1	CO2
	B	b. Introduction to Laboratory glassware's -2	
	C	c. Maintenance of Laboratory glassware's	
	Unit 3	Safety measures and Lab protocols	
	A	a. Safety measurements in Biochemistry lab	CO3
	B	b. General laboratory protocols	
	C	c. Awareness in a lab	
	Unit 4	Preparation of acid and bases of different concentrations	
	A	a. Preparation of acids of different concentration	CO4
	B	b. Preparation of bases of different concentration	
	C	c. Preparation of solutions of different concentration	
	Unit 5	Titration	

	A	a. Determination of the strength of NaOH solution			CO5
	B	b. Determination of the strength of HCl solution			
	C	c. Determination of the strength of NH ₄ OH solution			
	Mode of examination	Practical			
	Weightage	CA	Viva-voce	ETE	
	Distribution	25%	25%	50%	
	Text book/s*	1) A text book of Medical Biochemistry by Chatterjee & Shinde			
	Other References	2) Text book of biochemistry for Medical students by Vasudevan and Sreekumari 3) Biochemistry by Lehninger 4) Clinical chemistry by Varley 5) Harpers Illustrated Biochemistryby Robert K.M.			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	2
CO2	3	2	2	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3
CO6	3	3	3	3	2	3	3	3
Avg PO attained	3.00	2.83	2.83	3.00	2.67	3.00	2.83	2.67

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 1st
1	Course Code	BOP108
2	Course Title	Physical Optics
3	Credits	3
4	Contact Hours (L-T)	2-1
	Course Type	Compulsory
5	Course Objective	The completion of this course will help in 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.
6	Course Outcomes	CO1: defining, listing and learning the facts about the physical optics CO2: recognizing, understanding, characterizing, explaining the various nature of physical optics. CO3: identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: performing, implementing and applying the concept of physical optics for better understanding of various functions of human eye. CO5: analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and applying on various optical behaviour of human eye.
7	Course Description	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 details.
8	Outline syllabus	CO Mapping
	Unit 1	Nature of light
	A	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.
	B	Polarized light; linearly polarized light; and circularly polarized light.
	C	Intensity of polarized light; Malus' Law; polarizers and analyzers; Methods of producing polarized light; Brewster's angle.
	Unit 2	
	A	Birefringence; ordinary and extraordinary rays and relationship between amplitude and intensity.
	B	Coherence; interference; constructive interference, destructive interference; fringes; fringe width. Double slits, multiple slits, gratings.
	C	Diffraction; diffraction by a circular aperture; Airy's disc
	Unit 3	

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	A	Resolution of an instrument (telescope, for example); Raleigh's criterion □ Scattering; Raleigh's scattering;			CO3
	B	Tyndall effect.			CO3
	C	Fluorescence and Phosphorescence			CO3
	Unit 4	Basics of Lasers			
	A	Coherence; population inversion			CO4,CO6
	B	Spontaneous emission			CO4,CO6
	C	Einstein's theory of lasers.			CO4,CO6
	Unit 5	Units of light measurement			
	A	Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and efficacy curves; photometric units			CO5,CO6
	B	Inverse square law of photometry; Lambert's law.			CO5,CO6
	C	Other units of light measurement; retinal illumination; Trolands			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	Subrahmanyam N, BrijLal, <i>A text book of Optics</i> , S. Chand Co Ltd, New Delhi, India, 2003.			
	Other References	<ul style="list-style-type: none">▪ Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998.▪ Keating NM. P, <i>Geometric, Physical and Visual Optics</i>, Butterworth- Heinemann, Massachusetts, USA, 2002.			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	3	3	2	2	3
Avg PO attained	2.83	3	2.66	3	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 1st
1	Course Code	BOP158
2	Course Title	Physical Optics (LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	The completion of this course will help in 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.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the physical optics CO2: Recognizing, understanding, characterizing, explaining the various nature of physical optics. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of physical optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and various optical behaviour of human eye.
7	Course Description	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 details.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Gratings
	B	Determination of grating constant using Sodium vapour lamp
	C	Determination of wavelengths of light from Mercury vapour lamp
	Unit 2	
	A	Circular Apertures
	B	Measurements of Airy's disc for apertures of various sizes
	C	
	Unit 3	
	A	Verification of Malus' Law using a polarizer – analyzer combination
	B	Demonstration of birefringence using Calcite crystals
	C	Measurement of the resolving power of telescopes.
	Unit 4	
	A	Newton's rings
	B	Demonstration of fluorescence and phosphorescence using crystals and paints
	C	
	Unit 5	

	A	Demonstration of Tyndall Effect			CO5,CO6
	B	Einstein's theory of lasers.			CO5,CO6
	C				
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	Subrahmanyam N, BrijLal, <i>A text book of Optics</i> , S. Chand Co Ltd, New Delhi, India, 2003.			
	Other References	<ul style="list-style-type: none"> Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. Keating NM. P, <i>Geometric, Physical and Visual Optics</i>, Butterworth- Heinemann, Massachusetts, USA, 2002. 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	3	3	3	3	3
CO2	3	2	2	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3
CO4	2	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.83	2.5	2.66	2.83	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 1st	
1	Course Code	BOP109	
2	Course Title	Geometrical Optics-I	
3	Credits	5	
4	Contact Hours (L-T)	4-1	
	Course Type	Compulsory	
5	Course Objective	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. Also to equip the students with a thorough knowledge of mirrors and lenses.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the geometrical nature of light. CO2: Recognizing, Understanding, characterizing, explaining the various nature of geometrical nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of geometrical optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate and understand optical behaviour of human eye.	
7	Course Description	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.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Nature of light – light as electromagnetic oscillation	CO1
	B	Ideas of sinusoidal oscillations; amplitude and phase; speed of light in vacuum and other media; refractive index.	CO1
	C	Wavefronts – spherical, elliptical and plane; Curvature and vergence; rays; convergence and divergence in terms of rays and vergence; vergence at	CO1

		a distance Refractive index; its dependence on wavelength.	
	Unit 2		
	A	Plane mirrors – height of the mirror; rotation of the mirror; reflection by a spherical mirror – paraxial approximation; sign convention; derivation of vergence equation	CO2
	B	Imaging by concave mirror; Imaging by convex mirror; Reflectivity; transmittivity Fermat's and Huygen's Principle – Derivation of laws of reflection and refraction (Snell's law) from these principles.	CO2
	C	Snell's Law; refraction at a plane surface, glass slab; displacement without deviation; displacement without dispersion.	CO2
	Unit 3		
	A	Thick prisms; angle of prism; deviation produced by a prism; refractive index of the prism □ Prisms; angular dispersion; dispersive power; Abbe's number.	CO3
	B	Definition of crown and flint glasses; materials of high refractive index; Thin prism – definition; definition of Prism diopter; deviation produced by a thin prism; its dependence on refractive index	CO3
	C	Refraction by a spherical surface; sign convention; introduction to spherical aberration using image formed by a spherical surface of a distance object; sag formula; Paraxial approximation; derivation of vergence equation; imaging by a positive powered surface, Imaging by a negative powered surface	CO3
	Unit 4		
	A	Vergence at a distance formula; effectivity of a refracting surface; definition of a lens as a combination of two surfaces; different types of lens shapes.	CO4,CO6
	B	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	CO4,CO6
	C	Newton's formula; linear magnification; angular magnification; nodal Planes	CO4,CO6
	Unit 5		

	A	Thin lens as a special case of thick lens; review of sign convention; Imaging by a thin convex lens; image properties (real/virtual; erect/inverted; magnified/minified) for various object positions			CO5,CO6
	B	Imaging by a thin concave lens; image properties (real/virtual; erect/inverted; magnified/minified) for various object positions □ Prentice's Rule			CO5,CO6
	C	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			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> Tunnacliffe A. H, Hirst J. G, <i>Optics</i>, The association of British Dispensing Opticians, London, U.K., 1990. Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. 			
	Other References	<ul style="list-style-type: none"> Loshin D. S. <i>The Geometric Optics Workbook</i>, Butterworth-Heinemann, Boston, USA, 1991. Schwartz S. H. <i>Geometrical and Visual Optics: A Clinical Introduction</i>, McGraw-Hill, New York, USA, 2002. 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3
CO5	3	2	3	3	3	3	3	3
CO6	2	3	3	2	3	2	3	2
Avg PO attained	2.83	2.83	2.83	2.83	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 1st
1	Course Code	BOP001
2	Course Title	Optometric Procedures-I
3	Credits	2
4	Contact Hours (L-T)	4
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts that would lay the foundation for their courses in the next semester.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the HUMAN EYE CO2: Recognizing, Understanding, characterizing, explaining the various NATURE OF LIGHT AND ITS CORETATION WITH EYE. CO3: Identifying, locating and demonstrating the various OPTICAL INSTRUMENTS AND THEIR INTERPRETATION. CO4: Performing, implementing and applying the concept for better understanding of various FUNCTIONS OF HUMAN EYE. CO5: Analyzing, categorizing, comparing and differentiating various BEHAVIOUR OF HUMAN EYE. CO6 : To evaluate , analyze and apply the various diagnosis for human eye
7	Course Description	The completion of this course will help in thorough knowledge of mirrors, lenses and instruments
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Practical demonstration of Anterior segment of eye
	B	Practical demonstration of Posterior segment of eye
	C	Practical demonstration of Ocular adnexa
	Unit 2	
	A	Practical demonstration of Trial box contents, various types of lenses, it purpose
	B	The image shift with the trial lenses.
	C	Hand Neutralisation of Trial Lenses
	Unit 3	
	A	Role play on History Taking and its importance

	B	Practical demonstration of Basic Eye Examination			CO3
	C	Practical demonstration of History Taking department wise			CO3
	Unit 4				
	A	Infection Control-1			CO4,CO6
	B	Infection Control-2			CO4,CO6
	C	Infection Control-3			CO4,CO6
	Unit 5				
	A	Practical demonstration of Visual Acuity			CO5,CO6
	B	Taking Visual acuity			CO5,CO6
	C	Documenting Visual acuity			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> Tunnacliffe A. H, Hirst J. G, <i>Optics</i>, The association of British Dispensing Opticians, London, U.K., 1990. Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. 			
	Other References	<ul style="list-style-type: none"> Loshin D. S. <i>The Geometric Optics Workbook</i>, Butterworth-Heinemann, Boston, USA, 1991. Schwartz S. H. <i>Geometrical and Visual Optics: A Clinical Introduction</i>, McGraw-Hill, New York, USA, 2002. 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	1	3	3	1	3	3	2	3
CO4	3	2	3	3	3	2	3	3
CO5	1	3	3	3	3	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.33	2.83	2.66	2.5	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme : BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 1st	
1	Course Code	ARP101	
2	Course Title	Communicative English-1	
3	Credits	2	
4	Contact Hours (L-T-P)	0-1-2	
	Course Type	Compulsory	
5	Course Objective	<p>To minimize the linguistic barriers that emerges in varied socio-linguistic environments through the use of English. Help students to understand different accents and standardise their existing English. Guide the students to hone the basic communication skills - listening, speaking, reading and writing while also uplifting their perception of themselves, giving them self-confidence and building positive attitude.</p>	
6	Course Outcomes	<p>After completion of this course, students will be able to:</p> <p>CO1 Develop a better understanding of advanced grammar rules and write grammatically correct sentences</p> <p>CO2 Acquire wide vocabulary and punctuation rules and learn strategies for error-free communication.</p> <p>CO3 Interpret texts, pictures and improve both reading and writing skills which would help them in their academic as well as professional career</p> <p>CO4 Comprehend language and improve speaking skills in academic and social contexts</p> <p>CO5 Develop, share and maximise new ideas with the concept of brainstorming and the documentation of key critical thoughts articulated towards preparing for a career based on their potentials and availability of opportunities.</p> <p>CO6 Function effectively in multi-disciplinary teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality</p>	
7	Course Description	<p>The course is designed to equip students, who are at a very basic level of language comprehension, to communicate and work with ease in varied workplace environment. The course begins with basic grammar structure and pronunciation patterns, leading up to apprehension of oneself through written and verbal expression as a first step towards greater employability.</p>	
8	Outline syllabus		CO Mapping
	Unit A	Sentence Structure	CO Mapping

	Topic 1	Subject Verb Agreement	CO1
	Topic 2	Parts of speech	
	Topic 3	Writing well-formed sentences	
	Unit B	Vocabulary Building & Punctuation	
	Topic 1	Homonyms/ homophones, Synonyms/Antonyms	CO1, CO2
	Topic 2	Punctuation/ Spellings (Prefixes-suffixes/Unjumbled Words)	CO1, CO2
	Topic 3	Conjunctions/Compound Sentences	CO1, CO2
	Unit C	Writing Skills	
	Topic 1	Picture Description – Student Group Activity	CO3
	Topic 2	Positive Thinking - Dead Poets Society-Full-length feature film - Paragraph Writing inculcating the positive attitude of a learner through the movie SWOT Analysis – Know yourself	CO3, CO2, CO3
	Topic 3	Story Completion Exercise –Building positive attitude - The Man from Earth (Watching a Full length Feature Film)	CO2, CO3
	Topic 4	Digital Literacy Effective Use of Social Media	CO3
	Unit D	Speaking Skill	
	Topic 1	Self-introduction/Greeting/Meeting people – Self branding	CO4
	Topic 2	Describing people and situations - To Sir With Love (Watching a Full length Feature Film)	CO4
	Topic 3	Dialogues/conversations (Situation based Role Plays)	CO4
	Unit E	Professional Skills Career Skills	
	Topic 1	Exploring Career Opportunities	CO4, CO5
	Topic 2	Brainstorming Techniques & Models	CO4, CO5
	Topic 3	Social and Cultural Etiquettes	CO4, CO5
	Topic 4	Internal Communication	CO4, CO5
	Unit F	Leadership and Management Skills	
	Topic 1	Managerial Skills	CO6
	Topic 2	Entrepreneurial Skills	CO6
9	Evaluations	<i>Class Assignments/Free Speech Exercises / JAM Group Presentations/Problem Solving Scenarios/GD/Simulations (60% CA and 40% ETE</i>	N/A
10	Texts & References Library Links	<ul style="list-style-type: none"> Blum, M. Rosen. <i>How to Build Better Vocabulary</i>. London: Bloomsbury Publication Comfort, Jeremy (et.al). <i>Speaking Effectively</i>. Cambridge University Press 	

COs	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PS O1	PSO 2	PSO 3
ARP101.1	-	-	-	-	-	-	-	-	1	3		2	-	-	-
ARP101.2	-	-	-	-	-	-	-	-	1	3		2	-	-	-
ARP101.3	-	-	-	-	-	-	-	-	1	3		2	-	-	-
ARP101.4	-	-	-	-	-	-	-	-	1	2	1	2	-	-	-
ARP101.5	-	-	-	-	-	-	-	-	1	2	1	2	-	-	-
ARP101.6	-	-	-	-	-	-	-	-	1	2	1	2	-	-	-

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2nd	
1	Course Code	BOC 201	
2	Course Title	Basic Biochemistry-II	
3	Credits	3	
4	Contact Hours (L-T-P)	2-1-0	
	Course Type	Compulsory	
5	Course Objective	<ul style="list-style-type: none"> To train the students in the management of medical laboratory along with handling a variety of laboratory chemicals and instruments including electronic and advanced equipment's used in modern medical laboratories. To make the students able to do routine laboratory testing under stipulated conditions. To prepare specimens and operate machines that automatically analyse samples. To provide the conceptual basis for understanding biochemical and particularly address the fundamental mechanisms of the biomolecules to facilitate the life. To develop diagnostic skills in clinical biochemistry and to provide an advanced understanding of the core principles and topics of Biochemistry and their experimental basis. 	
6	Course Outcomes	CO1: Student are able to know the importance of amino acid chemistry CO2: Student are able to develop the understanding about the importance of Enzymes CO3: Students are able to build the ability to understand the importance of Minerals CO4: Student are able to know the importance of vitamins in biological system CO5: Student are able to develop the understanding about the importance of chemistry of nucleic acid CO6: Students are able to build the ability to understand the importance cellular constituents and cell biology	
7	Course Description	<ul style="list-style-type: none"> Amino-acid Chemistry Enzymes Mineral metabolism Vitamins Cell Biology, Nucleotide and Nucleic acid Chemistry 	
8	Outline syllabus		CO Mapping
	Unit 1	Amino-acid Chemistry	
	A	1. Amino acid chemistry: Definition, Classification, Peptide bonds. Peptides: Definition, Biologically important peptides. 2. Protein chemistry: Definition, Classification, Functions of proteins, 3. Primary, Secondary, tertiary and quaternary	CO1
	B		
	C		

		structure of proteins			
	Unit 2	Enzymes			
	A	1. Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity. 2. Enzyme inhibition and significance, 3. Isoenzymes, Diagnostic enzymology (clinical significance of enzymes)			CO2
	B				
	C				
	Unit 3	Mineral metabolism			
	A	1. Definition, Sources, RDA, absorption, transport, and excretion of various minerals. 2. Functions of various minerals 3. Disorder of various minerals (Sodium, Potassium, Calcium, Phosphate, Sulphur, Iron, Magnesium, Fluoride, Selenium, Zinc and Copper)			CO3
	B				
	C				
	Unit 4	Vitamins			
	A	1. Definition, classification according to solubility, Sources and Coenzyme forms of different vitamins 2. Functions, RDA, digestion, absorption and transport of various vitamins. 3. Deficiency and toxicity of various vitamins			CO4
	B				
	C				
	Unit 5	Cell Biology, Nucleotide and Nucleic acid Chemistry			
	A	1. Cell structure, Cell membrane structure and function, various types of absorption. Intracellular organelles and their functions, briefly on cytoskeleton. 2. Nucleotide chemistry: Nucleotide composition, functions of free nucleotides in body. 3. Nucleic acid (DNA and RNA) chemistry: Difference between DNA and RNA, Structure of DNA (Watson and Crick model), Functions of DNA. Structure and functions of tRNA, rRNA, mRNA.			CO5 CO6
	B				
	C				
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	1. A text book of Medical Biochemistry by Chatterjee & Shinde 2. Text book of biochemistry for Medical students by Vasudevan and Sreekumari 3. Biochemistry by Lehninger 4. Clinical chemistry by Varley 5. Harpers Illustrated Biochemistry by Robert K.M.			
	Other References				

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	2
CO2	3	2	2	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3
CO6	3	3	3	3	2	3	3	3
Avg PO attained	3.00	2.83	2.83	3.00	2.67	3.00	2.83	2.67

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2nd	
1	Course Code	BOC251	
2	Course Title	Basic Biochemistry-II (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Understanding, characterising, explaining, identifying and locating the biochemical present, analysing, categorising, comparing and differentiating the biochemical present in the human body.	
6	Course Outcomes	CO1: Build the ability to understand the importance of different types of acids CO2: Create the knowledge about the importance of different types of bases CO3: Develop the understanding to know the importance of different types of solutions CO4: Build the ability to understand the importance of different types of reagents CO5: To understand the importance of biomolecules CO6: To understand various ways to identify the biomolecules	
7	Course Description	<ul style="list-style-type: none"> • Preparation of acids of different concentration: • Preparation of bases of different concentration: • Preparation of solutions of different concentration: • Qualitative analysis of Carbohydrates • Qualitative analysis of Proteins 	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	a. Preparation of acids of different concentration-1	CO1
	B	b. Preparation of acids of different concentration-2	
	C	c. Preparation of acids of different concentration-3	
	Unit 2		
	A	a) Preparation of bases of different concentration-1	CO2
	B	b) Preparation of bases of different concentration-2	
	C	c) Preparation of bases of different concentration-3	
	Unit 3		
	A	a. Preparation of solutions of different concentration-1	CO3
	B	b. Preparation of solutions of different concentration-2	
	C		

		c. Preparation of solutions of different concentration-3			
	Unit 4				
	A	a) Qualitative analysis of Carbohydrates-1 b) Qualitative analysis of Carbohydrates-2 c) Qualitative analysis of Carbohydrates-3			CO4,CO6
	B				
	C				
	Unit 5				
	A	a) Qualitative analysis of Proteins-1 b) Qualitative analysis of Proteins-2 c) Qualitative analysis of Proteins-3			CO5
	B				
	C				
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25	25	50	
	Text book/s*	1. A text book of Medical Biochemistry by Chatterjee & Shinde 2. Text book of biochemistry for Medical students by Vasudevan and Sreekumari 3. Biochemistry by Lehninger 4. Clinical chemistry by Varley 5. Harpers Illustrated Biochemistry by Robert K.M.			
	Other References				

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	2
CO2	3	2	2	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	2
CO5	3	3	3	3	2	3	3	3
CO6	3	3	3	3	2	3	3	3
Avg PO attained	3.00	2.83	2.83	3.00	2.67	3.00	2.83	2.67

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 2nd
1	Course Code	BOP111
2	Course Title	Ocular Anatomy
3	Credits	4
4	Contact Hours (L+T)	3+1
	Course Type	Compulsory
5	Course Objective	<ul style="list-style-type: none"> Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of various structures in the eye and adnexa Identify the microscopic structures of various tissues in the eye and correlate the structure with the functions. Comprehend the basic structure and connections between the various parts of the central nervous system and the eye so as to understand the neural connections and distribution. To understand the basic principles of ocular embryology.
6	Course Outcomes	<p>CO1: Defining, listing and learning the facts about the anatomical structure of human eye..</p> <p>CO2: Recognizing, Understanding, characterizing, explaining the various anatomical structure of human eye..</p> <p>CO3: Identifying, locating and demonstrating the various anatomical structures of human eye.</p> <p>CO4: Performing, implementing and applying the concept for better understanding of various anatomical structures of human eye.</p> <p>CO5: Analyzing, categorizing, comparing and differentiating various anatomical structures of human eye.</p> <p>CO6 : To evaluate and understand about various anatomical structures of human eye.</p>
7	Course Description	This course deals with detailed anatomy of the orbit, eyeball and cranial nerves associated with ocular functions.
8	Outline syllabus	CO Mapping
	Unit 1	The Sensory Organs
	A	Structure of skin, ear, nose, tongue
	B	Structure of auditory and olfactory apparatus
	C	Applied anatomy of sensory organ
	Unit 2	The Endocrine System
	A	Structure of Pituitary, Pancreas, thyroid
	B	Structure of Parathyroid, thymus and adrenal glands
	C	Applied anatomy endocrine system
	Unit 3	Detail study of orbit
	A	Contents of orbit; Blood supply of orbit

	B	Extraocular muscles			CO1,CO3, CO5
	C	Detailed study of each of the following nerves in terms of their nuclei, course, relationship with brain, effects of compression at different regions; Optic nerve, Oculomotor nerve, Trochlear nerve, Trigeminal nerve, Abducent nerve and Facial nerve			CO1,CO2
	Unit 4	Layers of eye ball			
	A	Embryology of eye; Ocular Adnexa and Lacrimal system			CO2, CO4
	B	Sclera , cornea ,choroid , ciliary body ,iris and retina			CO4, CO5,CO6
	C	Applied anatomy of layers of eye ball			CO1,CO3, CO5
	Unit 5	Chambers of eye			
	A	Aqueous humour; Vitreous body			CO1,CO3,CO6
	B	Lens			CO2, CO5
	C	Applied anatomy of eye ball			CO4, CO5
	Mode of examination	Theory			
	Weightage Distribution	CA 25%	MTE 25%	ETE 50%	
	Text book/s*	Human Anatomy by Japee brothers			
	Other References	Anatomy and Physiology of human body			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	3	3	3
CO2	2	3	2	3	3	3	3	2
CO3	3	3	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	3
CO5	3	2	3	3	3	3	3	3
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.83	2.66	2.5	2.83	2.83	2.8	3	2.6

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 2nd
1	Course Code	BOP160
2	Course Title	Ocular Anatomy (LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	<ul style="list-style-type: none"> Comprehend the normal disposition, inter-relationships, gross, functional and applied anatomy of various structures in the eye and adnexa Identify the microscopic structures of various tissues in the eye and correlate the structure with the functions. Comprehend the basic structure and connections between the various parts of the central nervous system and the eye so as to understand the neural connections and distribution. To understand the basic principles of ocular embryology.
6	Course Outcomes	<p>CO1: Defining, listing and learning the facts about the anatomical structure of human eye.</p> <p>CO2: Recognizing, Understanding, characterizing, explaining the various anatomical structure of human eye.</p> <p>CO3: Identifying, locating and demonstrating the various anatomical structures of human eye.</p> <p>CO4: Performing, implementing and applying the concept for better understanding of various anatomical structures of human eye</p> <p>CO5: Analyzing, categorizing, comparing and differentiating various anatomical structures of human eye.</p> <p>CO6 : To evaluate and understand about various anatomical structures of human eye</p>
7	Course Description	This course deals with detailed anatomy of the orbit, eyeball and cranial nerves associated with ocular functions.
8	Outline syllabus	CO Mapping
	Unit 1	The Sensory Organs
	A	Practical demonstration of skin, ear using specimen or video
	B	Practical demonstration of auditory and olfactory apparatus using specimen or video
	C	Practical demonstration of nose, tongue using specimen or video
	Unit 2	The Endocrine System
	A	Practical demonstration of Pituitary, Pancreas using specimen or video
	B	Practical demonstration of thymus and adrenal glands using specimen or video
	C	Practical demonstration of thyroid and Parathyroid using specimen or video

	Unit 3	Detail study of orbit			
	A	Practical demonstration of orbit and blood supply using specimen or video			CO2,CO4, CO5
	B	Practical demonstration of extra-ocular muscle using specimen or video			CO1,CO3, CO5
	C	Practical demonstration of nerve supply of the orbit using specimen or video			CO1,CO2
	Unit 4	Layers of eye ball			
	A	Practical demonstration of ocular adnexa and lacrimal system using specimen or video			CO2, CO4
	B	Practical demonstration of Sclera , cornea using specimen or video			CO4, CO5,CO6
	C	Practical demonstration of choroid, ciliary body, iris and retina using specimen or video			CO1,CO3, CO5
	Unit 5	Chambers of eye			
	A	Practical demonstration of aqueous humour using specimen or video			CO1,CO3
	B	Practical demonstration of vitreous body using specimen or video			CO2, CO5
	C	Practical demonstration of Lens using specimen or video			CO4, CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	Human Anatomy by Japee brothers			
	Other References	Anatomy and Physiology of human body			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	1	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2
CO3	2	3	3	2	3	3	3	3
CO4	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3
CO6	2	3	2	3	3	2	3	2
Avg PO attained	2.66	3	2.33	2.83	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2nd	
1	Course Code	BOP112	
2	Course Title	Ocular Physiology	
3	Credits	4	
4	Contact Hours (L-T)	3-1	
	Course Type	Compulsory	
5	Course Objective	1. Understanding, characterizing, explaining, identifying and locating physiology of the human body.. 2. Identifying and locating the physiological structure of the human body	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the physiological structure of humaneye. CO2: Recognizing, Understanding, characterizing, explaining the various physiological structure of humaneye. CO3: Identifying, locating and demonstrating the various physiological structure of human eye. CO4: Performing, implementing and applying the concept for better understanding of various physiological structure of humaneye. CO5: Analyzing, categorizing, comparing and differentiating various physiological structure of humaneye. CO6 : To evaluate and understand about various physiological structure of humaneye.	
7	Course Description	Ocular physiology deals with the physiological functions of each part of the eye.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Protective mechanisms in the eye	CO1
	B	Precorneal tear film, eyelids and lacrimation	CO1
	C	Extrinsic Ocular muscles, their actions and control of their movements	CO1
	Unit 2		
	A	Saccadic, smooth pursuit and Nystagmic eye movements	CO2
	B	Corneal Physiology	CO2
	C	Uveal tissue	CO2
	Unit 3		
	A	Physiology of Aqueous humor and vitreous	CO3
	B	Physiology of Iris and pupil	CO3
	C	Physiology of Crystalline lens and accommodation	CO3
	Unit 4		
	A	Retina	CO4,CO6
	B	Contrast visual acuity	CO4,CO6
	C	Visual acuity, vernier acuity and principle of measurement	CO4,CO6

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	Unit 5				
	A	Visual perception- Binocular vision, stereoscopic vision, optical illusion			CO5,CO6
	B	Visual pathway, central and cerebral connections, lesions of pathway and effects			CO5,CO6
	C	Colour vision and colour defects. Theories and diagnostic tests			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	Human Physiology by Japee brothers			
	Other References	Anatomy and Physiology of human body			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	2	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3
CO4	1	3	2	2	3	2	3	3
CO5	3	3	2	3	2	2	3	2
CO6	2	3	2	2	3	2	3	3
Avg PO attained	2.33	3	2.33	2.66	2.83	2.3	3	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2nd	
1	Course Code	BOP161	
2	Course Title	Ocular Physiology (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	1.Understanding, characterizing, explaining, identifying and locating physiology of the human body.. 2.Identifying and locating the physiological structure of the human body	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the physiological structure of humaneye. CO2: Recognizing, Understanding, characterizing, explaining the various physiological structure of humaneye. CO3: Identifying, locating and demonstrating the various physiological structure of human eye. CO4: Performing, implementing and applying the concept for better understanding of various physiological structure of humaneye. CO5: Analyzing, categorizing, comparing and differentiating various physiological structure of humaneye. CO6 : To evaluate and understand about various physiological structure of humaneye.	
7	Course Description	Physiology of eye	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Practical demonstration of TBUT	CO1
	B	Practical demonstration of Tests for lacrimation	CO1
	C	Practical demonstration of Schirmer test	CO1
	Unit 2		
	A	Practical demonstration of Extraocular movement	CO2
	B	Practical demonstration of Lid Movements	CO2
	C	Practical demonstration of Pupillary reflexes	CO2
	Unit 3		
	A	Practical demonstration of Applanation tonometer	CO3
	B	Practical demonstration of Schiotz tonometry	CO3
	C	Measurement of accommodation and convergence	CO3
	Unit 4		
	A	Visual acuity measurement	CO4,CO6
	B	Practical demonstration of Direct Ophthalmoscopy	CO4,CO6
	C	Binocular vision Grades assessment	CO4,CO6
	Unit 5		
	A	Practical demonstration of Retinoscopy	CO5,CO6
	B	Contrast visual acuity assessment	CO5,CO6
	C	Colour vision assessment	CO5,CO6

	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	Human Physiology by Japee brothers			
	Other References	Anatomy and Physiology of human body			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	2	3	3	2	1
CO2	3	3	2	3	3	3	2	1
CO3	3	2	3	2	3	2	2	1
CO4	1	3	3	3	3	2	1	2
CO5	3	2	3	3	3	2	2	1
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.5	2.5	2.66	2.5	3	2.33	2	1.33

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 2nd
1	Course Code	BOP113
2	Course Title	Geometrical Optics-II
3	Credits	4
4	Contact Hours (L-T)	3-1
	Course Type	Compulsory
5	Course Objective	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. Also to equip the students with a thorough knowledge of mirrors and lenses.
6	Course Outcomes	<p>CO1: Defining, listing and learning the facts about the GEOMETRICAL NATURE OF LIGHT.</p> <p>CO2: Recognizing, Understanding, characterizing, explaining the various NATURE OF GEOMETRICAL NATURE OF LIGHT.</p> <p>CO3: Identifying, locating and demonstrating the various OPTICAL INSTRUMENTS AND THEIR INTERPRETATION.</p> <p>CO4: Performing, implementing and applying the concept OF GEOMETRICAL OPTICS for better understanding of various FUNCTIONS OF HUMAN EYE.</p> <p>CO5: Analyzing, categorizing, comparing and differentiating various OPTICAL BEHAVIOUR OF HUMAN EYE.</p> <p>CO6 : To evaluate and understand about OPTICAL FUNCTIONING OF HUMAN EYE.</p>
7	Course Description	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
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Cylindrical Lenses; image formation; relation between cylinder axis and line image orientation; Imaging due to two cylinders in contact with axes parallel
	B	Two cylinders in contact with axes perpendicular; line images and their orientations to the cylinders' powers; interval of Sturm; circle of least confusion (CLC); spherical equivalent; position of CLC
	C	Spherical lens and a cylindrical lens in contact; spherical equivalent; interval of Sturm and CLC; Sphero-cylindrical lens notations – plus/minus cylinder form, cross cylinder/meridian form; transformations between them
	Unit 2	

	A	Field stops and apertures; entrance and exit pupils	CO2
	B	Apertures and defocus blur	CO2
	C	Receiver/detector diameter; depth of focus; depth of field	CO2
	Unit 3		
	A	Chromatic Aberrations; methods of removing chromatic aberrations; Abbe number; Monochromatic Aberrations – deviation from paraxial approximation; difference between ray aberrations and wavefront aberrations	CO3
	B	Third order aberrations – spherical aberrations; coma; astigmatism; distortion and curvature of fields	CO3
	C	Ways of minimizing spherical aberrations – pupil size, bending of lens, shape factor; Lens tilt – astigmatism; Higher order aberrations; introduction to Zernike Polynomials	CO3
	Unit 4		
	A	Telescopes – Keplerian, Galilean and Newtonian; position of cardinal points,	CO4,CO6
	B	Entrance and exit pupils; magnifications; advantages and disadvantages	CO4,CO6
	C	Microscopes – magnification; tube length.	CO4,CO6
	Unit 5		
	A	Gullstrand's Schematic Eye (GSE); calculation of the power of the cornea, the lens and the eye; axial length; calculation of the position of the cardinal points; magnification; GSE - Purkinje images and their reflectances	CO5,CO6
	B	GSE - entrance and exit pupils for a 3mm pupil; ocular aberrations – spherical aberrations and coma; chromatic aberrations; GSE – introduction to refractive errors - myopia and hyperopia; corneal curvature; axial length; far point; blur size calculations; corrections; astigmatism; blur size; circle of least confusion; correction.	CO5,CO6
	C	GSE - Object closer than at infinity; introduction to accommodation; far point; near point; presbyopia; spectacle and contact Lens corrections - comparison of magnification	CO5,CO6
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
		ETE 50%	

	Text book/s*	<ul style="list-style-type: none"> Tunnacliffe A. H, Hirst J. G, <i>Optics</i>, The association of British Dispensing Opticians, London, U.K., 1990. Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. 	
	Other References	<ul style="list-style-type: none"> Loshin D. S. <i>The Geometric Optics Workbook</i>, Butterworth-Heinemann, Boston, USA, 1991. Schwartz S. H. <i>Geometrical and Visual Optics: A Clinical Introduction</i>, McGraw-Hill, New York, USA, 2002. 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	2	3	3	3	3	3	2	3
CO4	3	3	2	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.66	3	2.5	2.83	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2nd	
1	Course Code	BOP162	
2	Course Title	Geometrical Optics-II(LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	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. Also to equip the students with a thorough knowledge of mirrors and lenses.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the GEOMETRICAL NATURE OF LIGHT. CO2: Recognizing, Understanding, characterizing, explaining the various NATURE OF GEOMETRICAL NATURE OF LIGHT. CO3: Identifying, locating and demonstrating the various OPTICAL INSTRUMENTS AND THEIR INTERPRETATION. CO4: Performing, implementing and applying the concept OF GEOMETRICAL OPTICS for better understanding of various FUNCTIONS OF HUMAN EYE. CO5: Analyzing, categorizing, comparing and differentiating various OPTICAL BEHAVIOUR OF HUMAN EYE. CO6 : To evaluate and understand about OPTICAL FUNCTIONING OF HUMAN EYE.	
7	Course Description	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	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	<ul style="list-style-type: none"> Thick Prism – determination of prism angle and dispersive power; calculation of the refractive index 	CO1

	B	▪ Thin Prism – measurement of deviation; calculation of the prism diopter	CO1
	C	▪ Image formation by spherical mirrors	CO1
	Unit 2		
	A	▪ Convex lens - power determination using lens gauge, power determination using distant object method; power determination using the vergence formula	CO2
	B	▪ Concave lens – in combination with a convex lens – power determination.	CO2
	C	▪ Construction of a tabletop telescope – all three types of telescopes.	CO2
	Unit 3		
	A	▪ Construction of a tabletop microscope	CO3
	B	▪ Imaging by a cylindrical lens – relationship between cylinder axis and image orientation	CO3
	C	▪ 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	CO3
	Unit 4		
	A	▪ Thick Prism – determination of prism angle and dispersive power; calculation of the refractive index	CO4,CO6
	B	▪ Thin Prism – measurement of deviation; calculation of the prism diopter	CO4,CO6
	C	▪ Image formation by spherical mirrors	CO4,CO6
	Unit 5		
	A	▪ position of the line images and their relation to the cylinders' powers and orientations	CO5,CO6
	B	▪ 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	CO5,CO6
	C	▪ position of the line images and their relation to the cylinders' powers and orientations	CO5,CO6
	Mode of examination	Practical	
	Weightage Distribution	CA	Viva-voce
		25%	25%
			ETE
			50%

	Text book/s*	<ul style="list-style-type: none"> Tunnacliffe A. H, Hirst J. G, <i>Optics</i>, The association of British Dispensing Opticians, London, U.K., 1990. Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. 	
	Other References	<ul style="list-style-type: none"> Loshin D. S. <i>The Geometric Optics Workbook</i>, Butterworth-Heinemann, Boston, USA, 1991. Schwartz S. H. <i>Geometrical and Visual Optics: A Clinical Introduction</i>, McGraw-Hill, New York, USA, 2002. 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	2	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.66	3	2.66	2.66	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2023-24
Branch: Optometry		Semester: 2nd
1	Course Code	BOP002
2	Course Title	Clinical Optometry-II
3	Credits	2
4	Contact Hours (L-T)	4
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts that would lay the foundation for their courses in the next semester.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the HUMAN EYE. CO2: Recognizing, Understanding, characterizing, explaining the various NATURE OF HUMAN EYE. CO3: Identifying, locating and demonstrating the various OPTICAL INSTRUMENTS AND THEIR INTERPRETATION. CO4: Performing, implementing and applying the concept for better understanding of various FUNCTIONS OF HUMAN EYE. CO5: Analyzing, categorizing, comparing and differentiating various OPTICAL BEHAVIOUR OF HUMAN EYE. CO6 : To evaluate and understand about OPTICAL FUNCTIONING OF HUMAN EYE.
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	• Objective refraction Principles of Retinoscopy CO1
	B	• Instrumentation brief and purpose CO1
	C	• Retinoscopy demonstration and practical on model eyes. CO1
	Unit 2	
	A	• Pupillary reflex test CO2
	B	• Anterior segment examination with torch light CO2
	C	• Slit lamp examination – demo CO2
	Unit 3	
	A	• Fundus demonstration by ophthalmoscopy CO3
	B	• Visual field testing CO3
	C	• Contrast visual acuity assessment CO3
	Unit 4	
	A	• Near point of convergence assessment CO4,CO6

	B	• Cover test			CO4,CO6			
	C	• Ocular Motility			CO4,CO6			
	Unit 5							
	A	• Colour vision			CO5,CO6			
	B	• IPD			CO5,CO6			
	C	• Stereopsis			CO5,CO6			
	Mode of examination	Practical						
	Weightage Distribution	CA	Viva-voce	ETE				
		25%	25%	50%				
	Text book/s*	<ul style="list-style-type: none"> Tunnacliffe A. H, Hirst J. G, <i>Optics</i>, The association of British Dispensing Opticians, London, U.K., 1990. Pedrotti L. S, Pedrotti Sr. F. L, <i>Optics and Vision</i>, Prentice Hall, New Jersey, USA, 1998. 						
	Other References	<ul style="list-style-type: none"> Loshin D. S. <i>The Geometric Optics Workbook</i>, Butterworth-Heinemann, Boston, USA, 1991. Schwartz S. H. <i>Geometrical and Visual Optics: A Clinical Introduction</i>, McGraw-Hill, New York, USA, 2002. 						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	2	1
CO2	3	3	2	3	3	3	2	1
CO3	3	2	3	2	3	2	2	1
CO4	3	3	3	3	3	2	1	2
CO5	3	2	2	3	3	2	2	1
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.83	2.66	2.33	2.66	3	2.33	2	1.33

School: SSAHS		Batch : 2023-2027	
Programme : BOPT		Current Academic Year: 2023-24	
Branch: Optometry		Semester: 2st	
1	Course Code	ARP102	
2	Course Title	Communicative English -2	
3	Credits	2	
4	Contact Hours (L-T)	1-0-2	
	Course Type	Compulsory	
5	Course Objective	To Develop LSRW skills through audio-visual language acquirement, creative writing, advanced speech et al and MTI Reduction with the aid of certain tools like texts, movies, long and short essays.	
6	Course Outcomes	<p>After completion of this course, students will be able to:</p> <p>CO1 Acquire Vision, Goals and Strategies through Audio-visual Language Texts</p> <p>CO2 Synthesize complex concepts and present them in creative writing</p> <p>CO3 Develop MTI Reduction/Neutral Accent through Classroom Sessions & Practice</p> <p>CO4 Determine their role in achieving team success through defining strategies for effective communication with different people</p> <p>CO5 Realize their potentials as human beings and conduct themselves properly in the ways of world.</p> <p>CO6 Acquire satisfactory competency in use of Quantitative aptitude and Logical Reasoning</p>	
7	Course Description	The course takes the learnings from the previous semester to an advanced level of language learning and self-comprehension through the introduction of audio-visual aids as language enablers. It also leads learners to an advanced level of writing, reading, listening and speaking abilities, while also reducing the usage of L1 to minimal in order to increase the employability chances.	
8	Outline syllabus	CO Mapping	
	Unit A	Acquiring Vision, Goals and Strategies through Audio-visual Language Texts	CO Mapping

	Topic 1	Pursuit of Happiness / Goal Setting & Value Proposition in life	CO1
	Topic 2	12 Angry Men / Ethics & Principles	
	Topic 3	The King's Speech / Mission statement in life strategies & Action Plans in Life	
	Unit B	Creative Writing	
	Topic 1	Story Reconstruction - Positive Thinking	CO2
	Topic 2	Theme based Story Writing - Positive attitude	
	Topic 3	Learning Diary Learning Log – Self-introspection	
	Unit C	Writing Skills 1	
	Topic 1	Precis	CO2
	Topic 2	Paraphrasing	
	Topic 3	Essays (Simple essays)	
	Unit D	MTI Reduction/Neutral Accent through Classroom Sessions & Practice	
	Topic 1	Vowel, Consonant, sound correction, speech sounds, Monothongs, Diphthongs and Triphthongs	CO3
	Topic 2	Vowel Sound drills , Consonant Sound drills, Affricates and Fricative Sounds	
	Topic 3	Speech Sounds Speech Music Tone Volume Diction Syntax Intonation Syllable Stress	
	Unit E	Gauging MTI Reduction Effectiveness through Free Speech	
	Topic 1	Jam sessions	CO3
	Topic 2	Extempore	
	Topic 3	Situation-based Role Play	
	Unit F	Leadership and Management Skills	
	Topic 1	Innovative Leadership and Design Thinking	CO4
	Topic 2	Ethics and Integrity	CO4
	Unit F	Universal Human Values	
	Topic 1	Love & Compassion, Non-Violence & Truth	CO5
	Topic 2	Righteousness, Peace	CO5
	Topic 3	Service, Renunciation (Sacrifice)	CO5
	Unit G	Introduction to Quantitative aptitude & Logical Reasoning	
	Topic 1	Analytical Reasoning & Puzzle Solving	CO6
	Topic 2	Number Systems and its Application in Solving Problems	CO6
9	Evaluations	<i>Class Assignments/Free Speech Exercises / JAM Group Presentations/Problem Solving Scenarios/GD/Simulations (60% CA and 40% ETE</i>	N/A
10	Texts & References Library Links	<ul style="list-style-type: none"> Wren, P.C.&Martin H. <i>High English Grammar and Composition</i>, S.Chand& Company Ltd, New Delhi. Blum, M. Rosen. <i>How to Build Better Vocabulary</i>. London: Bloomsbury Publication Comfort, Jeremy(et.al). <i>Speaking Effectively</i>. Cambridge University Press. 	

		The Luncheon by W.Somerset Maugham - http://mistera.co.nf/files/sm_luncheon.pdf	
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COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PSO 2	PSO 3
ARP102.1	-	-	-	-	-	-	-	-	1	3	1	2	-	-	-
ARP102.2	-	-	-	-	-	-	-	-	1	3	1	2	-	-	-
ARP102.3	-	-	-	-	-	-	-	-	1	3	1	2	-	-	-
ARP102.4	-	-	-	-	-	-	-	-	1	2	1	2	-	-	-
ARP102.5	-	-	-	-	-	-	-	-	1	2	1	2	-	-	-
ARP102.6	1	-	-	-	-	-	-	-	1	2	1	2	-	-	-

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP209	
2	Course Title	Microbiology	
3	Credits	2	
4	Contact Hours (L)	2	
	Course Type	Compulsory	
5	Course Objective	<ul style="list-style-type: none"> To prepare the students to gain essential knowledge about the characteristics of bacteria, viruses, fungi and parasites To acquire knowledge of the principles of sterilisation and disinfection in hospital and ophthalmic practice To understand the pathogenesis of the diseases caused by the organisms in the human body with particular reference to the eye infections To understand basic principles of diagnostic ocular Microbiology. 	
6	Course Outcomes	<p>CO1: Knowledge: defining, listing and recognizing the extremely small forms of life.</p> <p>CO2: Comprehension: understanding, characterizing, explaining, identifying and locating the extremely small forms of life.</p> <p>CO3; Application: performing, demonstrating, implementing and applying the concept of microbiology in better understanding the relevance to human eye.</p> <p>CO4: Analysis: analyzing, categorizing, comparing and differentiating the extremely small forms of life.</p> <p>CO5: Introduction to Virology and Classification of Viruses in Ocular Disease various associated virus and diseases.</p> <p>CO6: To explain the various aspects microbial characterization of the Bacteria, viruses.</p>	
7	Course Description	This course covers the basic biological, biochemical and pathogenic characteristics of pathogenic organisms	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Introduction to Microbiology,	CO1, CO2, CO5
	B	Types of Microorganisms, Physiology of Microorganisms	CO3,CO4
	C	Nutrition, Enzymes, Metabolism and energy, Microbial Growth	CO1,CO2
	Unit 2		
	A	Sterilization and disinfection:	CO2,CO4
	B	Sterilization in the laboratory,	CO1, CO3
	C	Control of Microbial Growth	CO1,CO3
	Unit 3		
	A	Microbes versus Humans- The development of Infection,	CO2,CO4

	B	The disease process	CO1,CO3
	C	Pathogenicity and virulence	CO1,CO2
	Unit 4		
	A	Ocular Bacteriology - Gram positive,(Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus, propionibacterium, actinomyces, Nocardia)	CO2
	B	Bacteria including acid fast bacilli (Mycobacterium tuberculosis, Mycobacterium leprae)	CO4,CO6
	C	Ocular Bacteriology - Gram negative Bacteria (pseudomonas, haemophiilus, Brucella, Neisseria, Moraxella) Spirochetes (Treponema, Leptospiraceae)	CO1,CO3
	Unit 5		
	A	Virology: Classification of Viruses in Ocular Disease, Rubella, Adenovirus, Oncogenic Viruses (HPV, HBV, EBV, Retroviruses), HIV.	CO1, CO5
	B	Fungi : Yeasts, Filamentous, Dimorphic	CO2,CO6
	C	Intracellularparasites- Chlamydia, Protozoa (Toxoplasmosis, Acanthamoeba)	CO4
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
			ETE 50%
	Text book/s	<ul style="list-style-type: none"> BURTON G.R.W: Microbiology for the Health Sciences, third edition, J.P. Lippincott Co., St. Louis, 1988. M J Pelczar (Jr),ECS Chan, NR Krieg : Microbiology ,fifth edition, TATA McGRAW-HILL Publisher, New Delhi,1993 	
	Reference Books	<ul style="list-style-type: none"> KJ Ryan, CG Ray: Sherris Medical Microbiology- An Introduction to infectious Diseases, fourth edition, McGRAWHILL Publisher, NewDelhi, 1994 MACKIE & McCartney Practical Medical Microbiology SYDNEY M. FINEGOLD & ELLEN JO BARON: Diagnostic Microbiology (DM) As per faculty recommendation 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	1
CO2	3	3	2	3	3	3	2	1
CO3	3	3	3	2	3	2	2	1
CO4	2	3	3	3	3	2	1	2
CO5	3	3	2	3	3	2	2	1
CO6	3	2	3	3	2	2	3	2
Avg PO attained	2.83	2.83	2.66	2.83	2.83	2.33	2	1.33

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 3rd
1	Course Code	BOP258
2	Course Title	Microbiology(LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts that would lay the foundation for their courses in the next semester.
6	Course Outcomes	<p>CO1: Knowledge: defining, listing and recognizing the extremely small forms of life.</p> <p>CO2: Comprehension: understanding, characterizing, explaining, identifying and locating the extremely small forms of life.</p> <p>CO3; Application: performing, demonstrating, implementing and applying the concept of microbiology in better understanding the relevance to human eye.</p> <p>CO4: Analysis: analyzing, categorizing, comparing and differentiating the extremely small forms of life.</p> <p>CO5: Introduction to Virology and Classification of Viruses in Ocular Disease various associated virus and diseases</p> <p>CO6: To explain the various aspects microbial characterization of the Bacteria, viruses.</p>
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Basic Lab glassware: Test tubes, screw capped tubes, CO1, CO2
	B	Pipette, Pasteur pipettes, pipette tips, cover slip and slides. CO3,CO4
	C	Erlenmeyer flask, Eppendorf tubes, CO1,CO2
	Unit 2	
	A	Basic Lab instrumentation: Autoclave, incubator, Hot air oven, CO2,CO4
	B	pH meter, Centrifuge, Laminar air flow. CO1, CO3
	C	Separatory funnel, centrifuge, pH meter, Electric balance, hot plate CO1,CO3
	Unit 3	
	A	Identify various microorganisms CO2,CO4

	B	Practical demo of various cultural media preparations			CO1,CO3
	C	Practical demo of growth of microorganism on cultural medias			CO1,CO2
	Unit 4				
	A	Practical demonstration of Gram's stain test			CO2
	B				CO4,CO6
	C	Practical demonstration of ZN stain test			CO1,CO3
	Unit 5				
	A	Practical demonstration of Biochemical test			CO5,CO6
	B				
	C				CO1, CO2
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25	25	50	
	Text book/s*	<ul style="list-style-type: none"> BURTON G.R.W: Microbiology for the Health Sciences, third edition, J.P. Lippincott Co., St. Louis, 1988. M J Pelczar (Jr), ECS Chan, NR Krieg : Microbiology ,fifth edition, TATA McGRAW-HILL Publisher, New Delhi, 1993 			
	Reference Books	<ul style="list-style-type: none"> KJ Ryan, CG Ray: Sherris Medical Microbiology- An Introduction to infectious Diseases, fourth edition, McGRAWHILL Publisher, NewDelhi, 1994 MACKIE & McCartney Practical Medical Microbiology SYDNEY M. FINEGOLD & ELLEN JO BARON: Diagnostic Microbiology (DM) As per faculty recommendation 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	3	3	3	3	3
CO2	3	2	3	3	3	3	3	2
CO3	3	2	3	3	3	3	3	3
CO4	3	2	3	3	3	3	3	3
CO5	3	2	3	3	3	3	3	3
CO6	3	2	3	3	3	2	3	2
Avg PO attained	3	2	3	3	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP206	
2	Course Title	Applied Optics-I	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about lenses, prisms, which would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the nature of light. CO2: Recognizing, understanding, characterizing, explaining the various nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : To evaluate and understand about various optical functioning of eye	
7	Course Description	This course deals with understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect.	
8	Outline syllabus		CO Mapping
	Unit 1	Light, Mirror, prism	
	A	Introduction – Light, Mirror; Reflection; Refraction and Absorption;	CO1
	B	Prisms – Definition; properties; Refraction through prisms; Thickness difference; Base-apex notation; uses, nomenclature and units;	CO1
	C	Sign Conventions; Fresnel's prisms; rotary prisms;	CO1
	Unit 2	Lenses	
	A	Lenses – Definition; units, terminology used to describe; form of lenses;	CO2
	B	Vertex distance and vertex power; Effectivity calculations;	CO2
	C	Lens shape; size and types i.e. spherical; cylindrical and Sphero-cylindrical;	CO2
	Unit 3	Transposition and prismatic effect	

	A	Transpositions – Simple; Toric and Spherical equivalent;	CO3
	B	Prismatic effect; centration; decent ration and Prentice rule;	CO3
	C	Prismatic effect of Plano-cylinder and Spherocylinder lenses;	CO3
	Unit 4	Spherometer	
	A	Spherometer & Sag formula; Edge thickness calculations;	CO4,CO6
	B	Magnification in high plus lenses; Minification in high minus lenses;	CO4,CO6
	C	Tilt induced power in spectacles and aberration in Ophthalmic Lenses;	CO4,CO6
	Unit 5	Lens: properties and measurement of power	
	A	The characteristics of lens material properties ;(Refractive index; specific gravity; UV cut off; impact resistance – include drop ball test; abbe value; Center thickness)	CO5,CO6
	B	Measurement of lens power;	CO5,CO6
	C	Quality control	CO5,CO6
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
			ETE 50%
	Text book/s*	<ul style="list-style-type: none"> Troy Fennin :Clinical Optics,,ButterworthHeinmann Jalie M: The principles of Ophthalmic Lenses, The Association of Dispensing Opticians, London, 1972 C V Brooks, IM Borish: System for Ophthalmic Dispensing, Second edition, Butterworth-Heinemann, USA, 1996 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	2
CO3	2	3	2		2	3	3	3
CO4	2	3	2		2	3	3	3
CO5	2	2	2	2	3	3	3	3
CO6	3	3	3	3	3	2	3	2
Avg PO attained	2.5	2.83	2.5	1.33	2.66	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP255	
2	Course Title	Applied Optics-I(LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about lenses, prisms, which would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the NATURE OF LIGHT. CO2: Recognizing, Understanding, characterizing, explaining the various NATURE OF LIGHT. CO3: Identifying, locating and demonstrating the various OPTICAL INSTRUMENTS AND THEIR INTERPRETATION. CO4: Performing, implementing and applying the concept OF OPTICS for better understanding of various FUNCTIONS OF HUMAN EYE. CO5: Analyzing, categorizing, comparing and differentiating various OPTICAL BEHAVIOUR OF HUMAN EYE. CO6 : To evaluate and understand about various optical functioning of eye	
7	Course Description	This course deals with understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Practical based on Introduction – Light, Mirror, Reflection, Refraction and Absorption;	CO1
	B	Practical based on Prisms – Definition, properties, Refraction through prisms, Thickness difference, Base-apex notation, uses, nomenclature and units;	CO1
	C	Sign Conventions, Fresnel's prisms, rotary prisms;	CO1
	Unit 2		
	A	Practical based on Lenses – Definition, units, terminology used to describe, form of lenses;	CO2
	B	Practical based on Vertex distance and vertex power, Effectivity calculations;	CO2

	C	Practical based on Lens shape, size and types i.e. spherical, cylindrical and Sphero-cylindrical;	CO2
	Unit 3		
	A	Practical based on Transpositions – Simple; Toric and Spherical equivalent;	CO3
	B	Practical based on Prismatic effect; centration, decentration and Prentice rule;	CO3
	C	Prismatic effect of Plano-cylinder and Sphero-cylinder lenses;	CO3
	Unit 4		
	A	Practical based on Spherometer & Sag formula, Edge thickness calculations;	CO4, CO6
	B	Practical based on Magnification in high plus lenses; Minification in high minus lenses;	CO4, CO6
	C	Practical based on Tilt induced power in spectacles and aberration in Ophthalmic Lenses;	CO4, CO6
	Unit 5		
	A	Practical based on The characteristics of lens material properties (Refractive index; specific gravity, UV cut off, impact resistance – include drop ball test; abbe value, Center thickness);	CO5, CO6
	B	Practical based on Measurement of lens power;	CO5, CO6
	C	Practical based on Quality control.	CO5, CO6
	Mode of examination	Practical	
	Weightage Distribution	CA 25	Viva-voce 25
			ETE 50
	Text book/s*	<ul style="list-style-type: none"> Troy Fennin :Clinical Optics,, Butterworth Heinemann Jalie M: The principles of Ophthalmic Lenses, The Association of Dispensing Opticians, London, 1972 C V Brooks, IM Borish: System for Ophthalmic Dispensing, Second edition, Butterworth-Heinemann, USA, 1996 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2
CO3	2	2	3	3	2	3	3	3
CO4	2	3	3	2	3	3	3	3
CO5	3	2	3	3	3	3	3	3
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.66	2.66	2.66	2.66	2.83	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP207	
2	Course Title	Visual Optics-I (Visual Perception & Neurophysiology)	
3	Credits	4	
4	Contact Hours (P)	3+1	
	Course Type	Compulsory	
5	Course Objective	To understand the fundamentals of optical components of the eye. To gain theoretical knowledge and practical skill on visual acuity measurement, objective and subjective clinical refraction.	
6	Course Outcomes	CO1: Defining, listing and learning the optics of human eye. CO2: Recognizing, Understanding, characterizing, explaining the optics of human eye. CO3: Identifying, locating and demonstrating the concept of optics in better understanding the relevance to the optics of human eye. CO4: Performing, implementing and applying the optics of human eye. CO5: Analyzing, categorizing, comparing and differentiating the optics of human eye CO6 : To evaluate and understand about various optical functioning of eye	
7	Course Description	This course deals with the concept of eye as an optical instrument and thereby covers various optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors	
8	Outline syllabus		CO Mapping
	Unit 1	Review of Geometrical Optics: Vergence and power	
	A	Conjugacy, object space and image space; Sign convention; Spherical refracting surface	CO1
	B	Spherical mirror; catoptric power; Cardinal points; Magnification; Light and visual function	CO1
	C	Clinical Relevance of: Fluorescence, Interference, Diffraction, Polarization, Birefringence, Dichroism; Aberration and application Spherical and Chromatic	CO1
	Unit 2	Optics of Ocular Structure	
	A	Cornea and aqueous	CO2
	B	Crystalline lens; Vitreous	CO2
	C	Schematic and reduced eye	CO2
	Unit 3	Measurements of Optical Constants of the Eye	
	A	Corneal curvature and thickness; Keratometry	CO3
	B	Curvature of the lens and ophthalmophakometry	CO3
	C	Axial and axis of the eye	CO3
	Unit 4	Basic Aspects of Vision	
	A	Visual Acuity	CO4,CO6
	B	Light and Dark Adaptation; Color Vision	CO4,CO6

	C	Spatial and Temporal Resolution; Science of Measuring visual performance and application to Clinical Optometry			CO4,CO6			
	Unit 5	Refractive anomalies and their causes						
	A	Etiology of refractive anomalies; Contributing variability and their ranges			CO5,CO6			
	B	Populating distributions of anomalies			CO5,CO6			
	C	Optical component measurements; Growth of the eye in relation to refractive errors			CO5,CO6			
	Mode of examination	Theory						
	Weightage Distribution	CA	MTE	ETE				
		25%	25%	50%				
	Text book/s*	<ul style="list-style-type: none"> A H Tunnacliffe: Visual optics, The Association of British Optician, 1987 AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998 BHVI student notes 						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	3	2	3	1	2	2	2	3
Avg PO attained	3	2.83	2.83	2.66	2.83	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP256	
2	Course Title	Visual Optics-I (Visual Perception & Neurophysiology) (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	To understand the fundamentals of optical components of the eye. To gain theoretical knowledge and practical skill on visual acuity measurement, objective and subjective clinical refraction.	
6	Course Outcomes	CO1: Defining, listing and learning the optics of human eye CO2: Recognizing, Understanding, characterizing, explaining the optics of human eye. CO3: Identifying, locating and demonstrating the concept of optics in better understanding the relevance to the optics of human eye. CO4: Performing, implementing and applying the optics of human eye. CO5: Analyzing, categorizing, comparing and differentiating the optics of human eye CO6 : To evaluate and understand about various optical functioning of eye	
7	Course Description	This course deals with the concept of eye as an optical instrument and thereby covers various optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors	
8	Outline syllabus		CO Mapping
	Unit 1	Review of Geometrical Optics: Vergence and power	
	A	Practical with spherical refracting surface	CO1
	B	Practical with spherical mirror	CO1
	C	Practical demonstration of; Fluorescence, Interference, Diffraction, Polarization, Birefringence, Dichroism	CO1
	Unit 2	Optics of Ocular Structure	
	A	Diagram of schematic eye model	CO2
	B	Diagram of optics of cornea	CO2
	C	Diagram of optics of lens	CO2
	Unit 3	Measurements of Optical Constants of the Eye	
	A	Measurement of corneal curvature	CO3
	B	Measurement of corneal thickness	CO3
	C	Practical demonstration of Keratometry	CO3
	Unit 4	Basic Aspects of Vision	
	A	Measurement of Visual Acuity	CO4,CO6
	B	Measurement of Contrast sensitivity	CO4,CO6

	C	Measurement of Colour Vision			CO4,CO6
	Unit 5	Refractive anomalies and their causes			
	A	Demonstration of dark adaptation			CO5,CO6
	B	Demonstration of light adaptation			CO5,CO6
	C	Measurement of optical components of the eye			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	A H Tunnacliffe: Visual optics, The Association of British Optician, 1987 AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998 □ BHVI student notes			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	2	3	2	3	3	3
CO2	2	3	2		2	2	3	3
CO3	2	3	2		2	3	2	3
CO4	3	2	2		2	2	3	3
CO5	2	3	3	3	3	2	3	2
CO6	3	2	3	2	3	2	2	3
Avg PO attained	2.5	2.5	2.33	1.33	2.33	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP210	
2	Course Title	Pathology	
3	Credits	2	
4	Contact Hours (L)	2	
	Course Type	Compulsory	
5	Course Objective	At the end of the course students will acquire knowledge in the following aspects: Inflammation and repair aspects Pathology of various eye parts and adnexa.	
6	Course Outcomes	CO1: Defining, listing and learning the essential nature of disease. CO2: Recognizing, Understanding, characterizing, explaining the abnormalities present in human body. CO3: Identifying, locating and demonstrating the concept of pathological changes in human body in better understanding the relevance to human eye. CO4: Performing, implementing and applying the structural and functional changes produced by any diseases. CO5: Analyzing, categorizing, comparing and differentiating the structural and functional changes produced by any diseases. CO6 : To evaluate and understand about various changes produced by diseases.	
7	Course Description	This course describes basic aspects of disease processes with reference to specific entities relevant in optometry/ophthalmology.	
8	Outline syllabus		CO Mapping
	Unit 1	General Pathology: Principles	
	A	Inflammation and repair	CO1, CO2
	B	Infection in general	CO3,CO4
	C	Shock, Anaphylaxis, Allergy	CO1,CO2,
	Unit 2	Specific infections	
	A	Tuberculosis	CO2,CO4
	B	Leprosy and Syphilis	CO1, CO3
	C	Fungal and Viral infections	CO1,CO3
	Unit 3	Haematology	
	A	Anemia and Leukemia	CO2,CO4
	B	Bleeding disorders	CO1,CO3
	C	Immune System	CO1,CO2,CO5
	Unit 4	Circulatory disturbances	
	A	Thrombosis	CO2,CO5
	B	Infarction	CO4,CO6
	C	Embolism	CO1,CO3
	Unit 5	Ocular Pathology	
	A	Infections of ocular surface	CO1,CO3

	B	Pathology of cornea and Conjunctiva			CO2,CO5
	C	Pathology of Uvea			CO4,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> CORTON KUMAR AND ROBINS: Pathological Basis of the Disease, 7th Edition, Elsevier, newDelhi, 2004. S R Lakhani Susan AD & Caroline JF: Basic Pathology: An introduction to the mechanism of disease, 1993. 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	2	3	2		2	2	3	3
CO3	2	3	2		2	3	2	3
CO4	2	2	2	2	3	2	3	3
CO5	3	3	3	3	2	2	3	2
CO6	2	3	2	3	3	2	2	3
Avg PO attained	2.33	2.83	2.33	1.83	2.5	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 3rd
1	Course Code	BOP208
2	Course Title	Ocular Disease-I
3	Credits	4
4	Contact Hours (L+T)	3+1
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be knowledgeable in the following aspects of ocular diseases: Etiolog; Epidemiology; Symptoms; Signs; Course sequelae of ocular disease; Diagnostic approach and Management of the ocular diseases
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of anterior segment of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of anterior segment of human eye. CO3: Identifying, locating and demonstrating the various diseases of anterior segment of the human eye. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases. CO6 : To evaluate and understand about various type of diseases.
7	Course Description	This course deals with various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases
8	Outline syllabus	CO Mapping
	Unit 1	Orbit
	A	Proptosis (Classification, Causes, Investigations); Enophthalmos; Developmental Anomalies (craniosynostosis, Craniofacial Dysostosis, Hypertelorism, Median facial cleft syndrome)
	B	Orbital Inflammations (Preseptal cellulites, Orbital cellulitis Orbital Periostitis, cavernous sinus Thrombosis); Grave's Ophthalmopathy; Orbital tumors(Dermoids, capillary haemangioma, Optic nerve glioma)
	C	Orbital blowout fractures; Orbital surgery (Orbitotomy); Orbital tumors; Orbital trauma; Approach to a patient with proptosis
	Unit 2	Lids
	A	Congenital anomalies (Ptosis, Coloboma, Epicanthus, Distichiasis, Cryptophthalmos); Oedema of the eyelid (Inflammatory, Solid, Passive edema)

		Inflammatory disorders (Blepharitis, External Hordeolum, Chalazion, Internal hordeolum, Mollusum Contagiosum)	
	B	Anomalies in the position of the lashes and Lid Margin (Trichiasis, Ectropion, Entropion, Symblepharon, Blepharophimosis, Lagophthalmos, Blepharospasm, Ptosis)	CO2
	C	Tumors (Papillomas, Xanthelasma, Haemangioma, Basal carcinoma, Squamous cell carcinoma, sebaceous gland melanoma)	CO2
	Unit 3	Lacrimal System	
	A	Tear Film; The Dry Eye (Sjogren's Syndrome)	CO3
	B	The watering eye (Etiology, clinical evaluation)	CO3
	C	Dacryocystitis; Swelling of the Lacrimal gland (Dacryoadenitis)	CO3
	Unit 4	Conjunctiva and Cornea	
	A	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	CO4,CO6
	B	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	CO4,CO6
	C	Degenerations; Dystrophies; Keratoconus, Keratoglobus; Corneal oedema, Corneal opacity, Corneal vascularisation; Penetrating Keratoplasty	CO4,CO6
	Unit 5	Uveal Tract and Sclera	
	A	Classification of uveitis; Etiology; Pathology; Anterior Uveitis; Posterior Uveitis	CO5,CO6
	B	Purulent Uveitis; Endophthalmitis; Panophthalmitis; Pars Planitis; Tumors of uveal tract(Melanoma)	CO5,CO6
	C	Episcleritis and scleritis; Clinical examination of Uveitis and Scleritis	CO5,CO6
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
			ETE 50%
	Text book/s*	A K Khurana: Comprehensive Ophthalmology, 4 th edition, new age international (p) Ltd. Publishers, New Delhi, 2007	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	2	3	2		2	3	3	2
CO3	2	3	2		2	3	3	3
CO4	2	2	2	1	3	3	3	3
CO5	3	3	3	3	3	3	3	3
CO6	3	2	3	1	2	2	3	2
Avg PO attained	2.5	2.66	2.5	1.33	2.5	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP257	
2	Course Title	Ocular Disease-I (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be knowledgeable in the following aspects of ocular diseases: Etiology; Epidemiology; Symptoms; Signs; Course sequelae of ocular disease; Diagnostic approach and Management of the ocular diseases	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of anterior segment of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of anterior segment of human eye. CO3: Identifying, locating and demonstrating the various diseases of anterior segment of the human eye. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases. CO6 : To evaluate and understand about various type of diseases.	
7	Course Description	This course deals with various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases	
8	Outline syllabus		CO Mapping
	Unit 1	Orbit	
	A	Clinical identification of proptosis	CO1
	B	Clinical identification of orbital Inflammations	CO1
	C	Measurement of proptosis with exophthalmometer	CO1
	Unit 2	Lids	
	A	Clinical identification of Congenital anomalies and inflammatory disorders of lid	CO2
	B	Ptosis measurement	CO2
	C	Clinical identification of tumors and anomalies in the position of the lashes and Lid Margin	CO2
	Unit 3	Lacrimal System	
	A	Measurement of tear film anomalies	CO3
	B	Clinical identification of Dacryocystitis	CO3
	C	Clinical identification of Dacryoadenitis	CO3
	Unit 4	Conjunctiva and Cornea	
	A	Clinical identification of conjunctival diseases	CO4,CO6

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	B	Clinical identification of different types of corneal inflammations			CO4,CO6
	C	Clinical identification of corneal degenerations and dystrophies; Keratoconus, Keratoglobus; Corneal oedema, Corneal opacity, Corneal vascularisation; Penetrating Keratoplasty			CO4,CO6
	Unit 5	Uveal Tract and Sclera			
	A	Clinical identification of uveitis			CO5,CO6
	B	Clinical identification of Endophthalmitis			CO5,CO6
	C	Clinical identification of episcleritis and scleritis			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	A K Khurana: Comprehensive Ophthalmology, 4 th edition, new age international (p) Ltd. Publishers, New Delhi, 2007			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	2	1
CO2	2	3	3	3	3	3	2	1
CO3	3	3	2	3	2	2	2	1
CO4	3	2	3	2	2	2	1	2
CO5	3	3	3	3	3	2	2	1
CO6	3	2	3	2	3	2	3	2
Avg PO attained	2.83	2.66	2.66	2.66	2.66	2.33	2	1.33

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 3rd	
1	Course Code	BOP003	
2	Course Title	Clinical Optometry-I	
3	Credits	4	
4	Contact Hours (P)	8	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basic knowledge about diagnostic procedures in different cases. Student will able to manage the outpatient department easily. This will master the students in freely diagnosing and handling variety of ocular abnormalities.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the human eye CO2: Recognizing, Understanding, characterizing, explaining the various nature of light and its corelation with eye. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various behaviour of human eye. CO6 : To evaluate and understand about various functioning of eye	
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	History taking,	CO1
	B	Visual acuity estimation	CO1
	C	Visual acuity recording	CO1
	Unit 2		
	A	Near point of accommodation, Near point of convergence	CO2
	B	Extraocular motility, Cover test, Alternating cover test	CO2
	C	Hirschberg test, Modified Krimsky, Pupils Examination, Maddox Rod, van Herrick	CO2
	Unit 3		
	A	External examination of the eye, Lid Eversion	CO3
	B	Schirmer's, TBUT, tear meniscus level, NITBUT (keratometer),	CO3
	C	Pupillary reflex test; Anterior segment examination with torch light – Slit lamp examination – demo	CO3
	Unit 4		

	A	Visual field testing	CO4,CO6
	B	Confrontation test, Amsler' grid; Colour vision; IPD; Stereopsis; Contrast visual acuity	CO4,CO6
	C	Photostress test, Glare acuity	CO4,CO6
	Unit 5		
	A	Slit-lamp biomicroscopy	CO5,CO6
	B	Digital pressure, Schiottz Tonometry, Applanation Tonometry, non-contact tonometry; Gonioscopy	CO5,CO6
	C	Corneal Sensitivity, HVID, Keratometry; Saccades and Pursuits; Indirect ophthalmoscopy; Fundus examination by slit lamp biomicroscopy	CO5,CO6
	Mode of examination	Practical	
	Weightage Distribution	CA 25%	Viva-voce 25%
			ETE 50%
	Text book/s*	<ul style="list-style-type: none"> A K Khurana: Comprehensive Ophthalmology, 4th edition, New age international (p) Ltd. Publishers, New Delhi, 2007 D B. Elliott :Clinical Procedures in Primary Eye Care, 3rd edition, Butterworth-Heinemann, 2007 Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth-Heinemann, 2007 J.B Eskridge, J F. Amos, J D. Bartlett: Clinical Procedures in Optometry, Lippincott Williams and Wilkins, 1991 N B. Carlson , DI Kurtz: Clinical Procedures for Ocular Examination, 3rd edition, McGraw-Hill Medical, 2003 	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	3	3
CO2	2	3	2		2	2	3	3
CO3	1	3	2		2	3	2	3
CO4	2	2	2	2	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	3	3	2	2	3
Avg PO attained	2.16	2.83	2.16	1.83	2.66	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 4th	
1	Course Code	BOP211	
2	Course Title	Applied Optics-II	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about lenses, prisms, which would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the nature of light. CO2: Recognizing, understanding, characterizing, explaining the various nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and applying the various optical practice of human eye.	
7	Course Description	This course deals with understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect. In addition deals with role of optometrists in optical set-up.	
8	Outline syllabus		CO Mapping
	Unit 1	Spectacle Lenses – II	
	A	Manufacture of glass; Lens materials; Lens surfacing; Principle of surface generation and glass cements	CO1
	B	Terminology used in Lens workshop; Lens properties; Faults in lens material; Faults on lens surface	CO1
	C	Lens quality; Methods of Inspecting the quality of lenses; Safety standards for ophthalmic lenses (FDA, ANSI, ISI, Others)	CO1
	Unit 2	Spectacle Frames	
	A	Types and parts; Classification of spectacle frames- material, weight, temple position, Coloration	CO2
	B	Frame construction; Frame selection	CO2

	C	Size, shape, mounting and field of view of ophthalmic lenses			CO2
	Unit 3	Tinted & Protective Lenses			
	A	Characteristics of tinted lenses Absorptive Glasses; Polarizing Filters			CO3
	B	Photochromic & Reflecting filters			CO3
	C	Safety lenses-Toughened lenses, Laminated Lenses, CR 39, Polycarbonate lenses			CO3
	Unit 4	Multifocal Lenses; Reflection from spectacle lens surface & lens coatings			
	A	Introduction, history and development, types; Bifocal lenses, Trifocal & Progressive addition lenses			CO4,CO6
	B	Reflection from spectacle lenses - ghost images - Reflections in bifocals at the dividing line			CO4,CO6
	C	Antireflection coating, Mirror coating, Hard Multi Coating [HMC], Hydrophobic coating			CO4,CO6
	Unit 5	Miscellaneous Spectacle			
	A	Iseikonic lenses; Spectacle magnifiers			CO5,CO6
	B	Recumbent prisms; Fresnel prism and lenses			CO5,CO6
	C	Lenticular &Aspherical lenses; High Refractive index glasses			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none">Troy Fennin :Clinical Optics,,ButterworthHeinmannJalie M: The principles of Ophthalmic Lenses, The Association of Dispensing Opticians, London, 1972C V Brooks, IM Borish: System for Ophthalmic Dispensing, Second edition, Butterworth-Heinemann, USA, 1996			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	2	2	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	2	3	2	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.66	2.83	2.33	2.83	2.83	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 4th
1	Course Code	BOP259
2	Course Title	Applied Optics-II(LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about lenses, prisms, which would lay the foundation for their courses in the next semester.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the nature of light. CO2: Recognizing, understanding, characterizing, explaining the various nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and applying the various optical practice of human eye.
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.
8	Outline syllabus	
	Unit 1	Spectacle lenses-II
	A	Identification of different types of spectacle lens material
	B	Glazing and edging Hands on
	C	Identification of faults in lens material and surface
	Unit 2	Spectacle frame
	A	Identification of parts of frame and types of frame
	B	Measurement of vertex distance
	C	Identification of different types of lens design: spherical, cylindrical and Sphero-cylindrical
	Unit 3	
	A	Practical based on Transpositions – Simple, Toric and Spherical equivalent
	B	Practical based on Prismatic effect, centration, decent ration and Prentice rule
	C	Prismatic effect of Plano-cylinder and Sphero-cylinder lenses
	Unit 4	

	A	Practical based on Spherometer & Sag formula, Edge thickness calculations			CO4,CO6
	B	Practical based on Magnification in high plus lenses, Minification in high minus lenses			CO4,CO6
	C	A collection of different lens types and frames types should be done by students.			CO4,CO6
	Unit 5				
	A	Project report : lens and spectacle frames available in Indian market			CO5,CO6
	B	Practical based on Measurement of lens power.			CO5,CO6
	C	Identification of different lens coating			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25	25	50	
	Text book/s*	<ul style="list-style-type: none"> Troy Fennin :Clinical Optics,,ButterworthHeinmann Jalie M: The principles of Ophthalmic Lenses, The Association of Dispensing Opticians, London, 1972 C V Brooks, IM Borish: System for Ophthalmic Dispensing, Second edition, Butterworth-Heinemann, USA, 1996 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2
CO3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.6	3	2.6	2.8	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 4th
1	Course Code	BOP212
2	Course Title	Visual Optics-II
3	Credits	4
4	Contact Hours (L+T)	3+1
	Course Type	Compulsory
5	Course Objective	To understand the fundamentals of optical components of the eye To gain theoretical knowledge and practical skill on visual acuity measurement, objective and subjective clinical refraction.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the nature of light. CO2: Recognizing, understanding, characterizing, explaining the various nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and applying the various optical practice of human eye.
7	Course Description	This course deals with the concept of eye as an optical instrument and thereby covers different optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors.
8	Outline syllabus	CO Mapping
	Unit 1	Accommodation & Presbyopia
	A	Far and near point of accommodation; Range and amplitude of accommodation
	B	Mechanism of accommodation; Variation of accommodation with age Anomalies of accommodation
	C	Presbyopia; Hypermetropia and accommodation
	Unit 2	Convergence
	A	Type
	B	Measurement and Anomalies
	C	Relationship between accommodation and convergence-AC/A ratio
	Unit 3	Objective Refraction (Static & Dynamic)
	A	Streak retinoscopy; Principle, Procedure, Difficulties and interpretation of findings
	B	Transposition and spherical equivalent; Dynamic retinoscopy various methods
	C	Radical retinoscopy and near retinoscopy; Cycloplegic refraction
	Unit 4	Subjective Refraction

	A	Principle and fogging			CO4,CO6			
	B	Fixed astigmatic dial(Clock dial),Combination of fixed and rotator dial(Fan and block test),J.C.C			CO4,CO6			
	C	Duochrome test o Binocular balancing- alternate occlusion, prism dissociation, dissociate Duochrome balance, Borish dissociated fogging o Binocular refraction-Various techniques			CO4,CO6			
	Unit 5	Effective Power &Magnification						
	A	Ocular refraction vs. Spectacle refraction • Spectacle magnification vs. Relative spectacle magnification •			CO5,CO6			
	B	Axial vs. Refractive ametropia, Knapp's law • Ocular accommodation vs. Spectacle accommodation			CO5,CO6			
	C	Retinal image blur-Depth of focus and depth of field			CO5,CO6			
	Mode of examination	Theory						
	Weightage Distribution	CA	MTE	ETE				
		25%	25%	50%				
	Text book/s*	<ul style="list-style-type: none"> A H Tunnaclyffe: Visual optics, The Association of British Optician, 1987 AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998 						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	2	1
CO2	3	3	2	3	3	3	2	1
CO3	3	3	3	3	3	2	2	1
CO4	3	3	3	3	3	2	1	2
CO5	3	3	2	3	3	2	2	1
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.66	3	2.5	2.83	2.83	2.33	2	1.33

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 4th
1	Course Code	BOP260
2	Course Title	Visual Optics-II (LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	To understand the fundamentals of optical components of the eye To gain theoretical knowledge and practical skill on visual acuity measurement, objective and subjective clinical refraction.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the nature of light. CO2: Recognizing, understanding, characterizing, explaining the various nature of light. CO3: Identifying, locating and demonstrating the various optical instruments and their interpretation. CO4: Performing, implementing and applying the concept of optics for better understanding of various functions of human eye. CO5: Analyzing, categorizing, comparing and differentiating various optical behaviour of human eye. CO6 : Evaluate , understand and applying the various optical practice of human eye.
7	Course Description	This course deals with the concept of eye as an optical instrument and thereby covers different optical components of eye, types of refractive errors, clinical approach in diagnosis and management of various types of refractive errors.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Practice of Retinoscopy- Dry & Wet
	B	Cases of myopia, Hypermetropia
	C	Cases of Simple myopic/hypermetropic astigmatism, compound myopic/ hypermetropic astigmatism , mixed astigmatism
	Unit 2	
	A	Practice of Refractometer, Keratometry
	B	Determining best vision sphere
	C	Near correction
	Unit 3	
	A	Practice of subjective refraction –Duochrome, Astigmatic fan
	B	Binocular balancing
	C	Data collection of various refractive errors in O.P.D. Procedure
	Unit 4	
	A	Cases of axial & refractive Anisometropia

	B	Patient data on (Auto Refractometer Vs subjective refraction)	CO4,CO6
	C	Calculation of AC/A ratio – Heterophoria /Gradient Method	CO4,CO6
	Unit 5		
	A	Measurement of NPA and NPC	CO5,CO6
	B	Case study on Pseudomyopia	CO5,CO6
	C	Identification of difficulties in retinoscopy	CO5,CO6
	Mode of examination	Practical	
	Weightage Distribution	CA 25	Viva-voce 25
			ETE 50
	Text book/s*	A H Tunnacliffe: Visual optics, The Association of British Optician, 1987 AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	2
CO2	3	3	2	2	2	2	3	2
CO3	2	3	3	3	3	3	1	3
CO4	3	2	3	3	3	2	3	3
CO5	3	2	3	3	3	3	3	2
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.6	2.6	2.6	2.6	2.8	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 4th
1	Course Code	BOP215
2	Course Title	Ocular Disease-II
3	Credits	4
4	Contact Hours (L+T)	3+1
	Course Type	Compulsory
5	Course Objective	Knowledge on 1. Etiology 2. Epidemiology 3. Symptoms 4. Signs 5. Course sequelae of ocular disease 6. Diagnostic approach, and 7. Management of the ocular diseases.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of anterior segment of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of anterior segment of human eye. CO3: Identifying, locating and demonstrating the various diseases of anterior segment of the human eye. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases. CO6 : Evaluate and understand the various ocular diseases of human eye..
7	Course Description	This course deals with various ocular diseases affecting various parts of the eyes. It covers clinical signs and symptoms, cause, pathophysiological mechanism, diagnostic approach, differential diagnosis and management aspects of the ocular diseases.
8	Outline syllabus	
	Unit 1	Retina and Vitreous:
	A	Applied Anatomy; Congenital and Developmental Disorders (Optic Disc: Coloboma, Drusen, Hypoplasia, Medullated nerve fibers; Persistent Hyaloid Artery)
	B	Inflammatory disorders (Retinitis : Acute purulent , Bacterial, Virus, mycotic); Retinal Vasculitis (Eales's); Retinal Artery Occlusion (Central retinal Artery occlusion); Retinal Vein occlusion (Ischaemic, Non Ischaemic , Branch retinal vein occlusion)
	C	Retinal degenerations : Retinitis Pigmentosa, Lattice degenerations; Macular disorders: Solar retinopathy, central serous retinopathy, cystoid macular oedema, Age related macular degeneration; Retinal Detachment: Rhegmatogenous, Tractional, Exudative); Retinoblastoma; Diabetic retinopathy; Lasers in Ophthalmology

	Unit 2	Ocular Injuries:	
	A	Terminology : Closed globe injury (contusion, lamellar laceration) Open globe injury (rupture, laceration, penetrating injury, perforating injury)	CO2
	B	Mechanical injuries (Extraocular foreign body, blunt trauma, perforating injury, sympathetic ophthalmitis)	CO2
	C	Non Mechanical Injuries (Chemical injuries, Thermal, Electrical, Radiational); Clinical approach towards ocular injury patients	CO2
	Unit 3	Lens	
	A	Applied Anatomy and Physiology; Clinical examination; Classification of cataract; Congenital and Developmental cataract; Acquired (Senile, Traumatic, Complicated, Metabolic, Electric, Radiational, Toxic);	CO3
	B	Morphological: Capsular, Subcapsular, Cortical, Supranuclear, Nuclear, Polar; Management of cataract; Complications of cataract surgery	CO3
	C	Displacement of lens: Subluxation, Displacement; Lens coloboma, Lenticonus, Microsperophakia.	CO3
	Unit 4	Clinical Neuro-ophthalmology	
	A	Anatomy of visual pathway; Lesions of the visual pathway; Pupillary reflexes and abnormalities (Amaurotic light reflex, Efferent pathway defect, Wernicke's hemianopic pupil, Marcus gunn pupil. Argyll Robertson pupil, Adie's tonic pupil)	CO4,CO6
	B	Optic neuritis, Anterior Ischemic optic neuropathy, Pappilloedema, optic atrophy	CO4,CO6
	C	Cortical blindness; Malingering; Nystagmus; Clinical examination	CO4,CO6
	Unit 5	Glaucoma	
	A	Applied anatomy and physiology of anterior segment; Clinical Examination; Definitions and classification of glaucoma; Pathogenesis of glaucomatous ocular damage; Congenital glaucomas	CO5,CO6
	B	Primary open angle glaucoma; Primary angle closure glaucoma (Primary angle closure suspect, Intermittent glaucoma, acute congestive, chronic angle closure)	CO5,CO6
	C	Ocular hypertension; Normal Tension Glaucoma Secondary Glaucomas;	CO5,CO6

		Management : common medications, laser intervention and surgical techniques; Glaucoma investigations and procedures: GTX,HRT,Provocative test			
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	A K Khurana: Comprehensive Ophthalmology, 4 th edition, new age international (p) Ltd. Publishers, New Delhi, 2007			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	2	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.66	3	2.5	2.88	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 4th	
1	Course Code	BOP213	
2	Course Title	Basic Pharmacology	
3	Credits	2	
4	Contact Hours (L)	2	
	Course Type	Compulsory	
5	Course Objective	Basic principle of pharmacokinetics & Pharmacodynamics Commonly used ocular drugs, mechanism, indications, contraindications, drug dosage and adverse effects.	
6	Course Outcomes	CO1: defining, listing and learning the facts of ophthalmic drugs. CO2: recognizing, understanding, characterizing and explaining, the various ophthalmic drugs that is useful in treatment and management of ocular diseases. CO3: identifying, locating and demonstrating the drugs of basic pharmacology which help in appropriate diagnosis and treatment of ocular or systematic diseases. CO4: performing, implementation and applying the different types drugs in various diseases. CO5: analyzing, categorizing, comparing and differentiating the type of ophthalmic drugs. CO6 : Evaluate , understand and applying the various drug practice in human eye.	
7	Course Description	This course covers the actions, uses, adverse effects and mode of administration of drugs, especially related to eyes.	
8	Outline syllabus		CO Mapping
	Unit 1	General Pharmacology	
	A	Mechanisms or drug action	CO1
	B	Dose–response relationship	CO1
	C	Pharmacokinetics of drug absorption, distribution, bio-transformation, excretion and toxicity, Factors influencing drug metabolism of drug action	CO1
	Unit 2	Action of Specific Agents	
	A	Depressants; Anti-coagulants	CO2
	B	Diuretics and hypertensive agent	CO2
	C	Histamines and anti histamines; Serotonin; Prostaglandins	CO2
	Unit 3	Principles of ocular pharmacology	
	A	Preparation and packing of ophthalmic drugs; General principles of ocular pharmacology; Drug action and effectiveness	CO3
	B	Drug safety; Factors influencing the objectively demonstrated response; Ocular penetration	CO3
	C	Routes of general and ocular drug administration	CO3
	Unit 4	Optometric Diagnostic Drugs	

	A	Optometric use of pharmaceuticals, Classification of drug used: Topical ophthalmic drugs, References and drug indices, Surface active drugs, Topical anaesthetics			CO4,CO6			
	B	Principles and classification of autonomic drugs: Sympathomimetics, Sympatholytics, Parasympathomimetics. Diagnostic use of autonomic drugs			CO4,CO6			
	C	Other drug of optometric interest: Physical agents, Germicides and sterilizing agents, Over –the counter drugs; Dyes and stains			CO4,CO6			
	Unit 5	Preparation of ophthalmic drugs (Ophthalmic drugs)						
	A	Anti glaucoma; Sulphonamides			CO5,CO6			
	B	Antibiotics; Corticosteroids			CO5,CO6			
	C	Anesthetics; Proteolytic enzymes			CO5,CO6			
	Mode of examination	Theory						
	Weightage Distribution	CA	MTE	ETE				
		25%	25%	50%				
	Text book/s*	K D TRIPATHI: Essentials of Medical Pharmacology. 5 th edition, Jaypee, New Delhi, 2004 Ashok Garg: Manual of Ocular Therapeutics, Jaypee, NewDelhi, 1996 Essentials of Medical Pharmacology by Tripathi Pharmacology &Pharmacotherapeutics by R. S. Satoskar □ Essentials of Pharmacotherapeutics by F. S. K. Barar						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	2
CO3	3	3	3	2	3	3	3	3
CO4	2	3	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.5	3	2.5	2.66	3	2.8	3	2.6

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 4th	
1	Course Code	BOP261	
2	Course Title	Basic Pharmacology LAB	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Basic principle of pharmacokinetics & Pharmacodynamics Commonly used ocular drugs, mechanism, indications, contraindications, drug dosage and adverse effects.	
6	Course Outcomes	CO1: defining, listing and learning the facts of ophthalmic drugs. CO2: recognizing, understanding, characterizing and explaining, the various ophthalmic drugs that is useful in treatment and management of ocular diseases. CO3: identifying, locating and demonstrating the drugs of basic pharmacology which help in appropriate diagnosis and treatment of ocular or systematic diseases. CO4: performing, implementation and applying the different types drugs in various diseases. CO5: analyzing, categorizing, comparing and differentiating the type of ophthalmic drugs. CO6 : Evaluate , understand and applying the various drug practice in human eye.	
7	Course Description	This course covers the actions, uses, adverse effects and mode of administration of drugs, especially related to eyes.	
8	Outline syllabus		CO Mapping
	Unit 1	Practical based on General Pharmacology	
	A	• Mechanisms or drug action	CO1
	B	• Dose–response relationship	CO1
	C	• Pharmacokinetics of drug absorption, distribution, bio-transformation, excretion and toxicity, Factors influencing drug metabolism of drug action	CO1
	Unit 2	Practical based on Action of Specific Agents	
	A	• Depressants; Anti-coagulants	CO2
	B	• Diuretics and hypertensive agent	CO2
	C	• Histamines and anti histamines; Serotonin; Prostaglandins	CO2
	Unit 3	Practical based on Principles of ocular pharmacology	
	A	• Preparation and packing of ophthalmic drugs; General principles of ocular pharmacology; Drug action and effectiveness	CO3
	B	• Drug safety; Factors influencing the objectively demonstrated response; Ocular penetration	CO3
	C	• Routes of general and ocular drug administration	CO3
	Unit 4	Practical based on Optometric Diagnostic Drugs	

	A	<ul style="list-style-type: none"> Optometric use of pharmaceuticals, Classification of drug used: Topical ophthalmic drugs, References and drug indices, Surface active drugs, Topical anaesthetics 	CO4,CO6	
	B	<ul style="list-style-type: none"> Principles and classification of autonomic drugs: Sympathomimetics, Sympatholytics, Parasympathomimetics. Diagnostic use of autonomic drugs 	CO4,CO6	
	C	<ul style="list-style-type: none"> Other drug of optometric interest: Physical agents, Germicides and sterilizing agents, Over –the counter drugs; Dyes and stains 	CO4,CO6	
	Unit 5	Practical based on Preperation of ophthalmic drugs		
	A	<ul style="list-style-type: none"> Anti glaucoma; Sulphonamides 	CO5,CO6	
	B	<ul style="list-style-type: none"> Antibiotics; Corticosteroids 	CO5,CO6	
	C	<ul style="list-style-type: none"> Anesthetics; Proteolytic enzymes 	CO5,CO6	
	Mode of examination	Practical		
	Weightage Distribution	CA	Viva-voce	ETE
		25	25	50
	Text book/s*	<ul style="list-style-type: none"> K D TRIPATHI: Essentials of Medical Pharmacology. 5th edition, Jaypee, New Delhi, 2004 Ashok Garg: Manual of Ocular Therapeutics, Jaypee, NewDelhi, 1996 Essentials of Medical Pharmacology by Tripathi Pharmacology &Pharmacotherapeutics by R. S. Satoskar Essentials of Pharmacotherapeutics by F. S. K. Barar 		

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	1	3	2	2	3
Avg PO attained	2.8	3	2.6	2.6	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 4th	
1	Course Code	BOP214	
2	Course Title	Optometric Instruments	
3	Credits	2	
4	Contact Hours (L)	2	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts of Optometric Instruments that would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1:Defininf, listing and learning the concept of instruments for visual acuity measurements CO2:Recognizinf, understanding ,characterizing and explaining the various instruments for anteriorment measurements CO3: Identifying, locating and demonstrating the various types of Instruments for posterior segment measurements CO4: Performing, implementation and applying the Instruments for orthoptic measurements CO5: Analyzing, categorizing, comparing and differentiating the various Instruments for ocular imaging CO6 : Evaluate , understand and applying the various instrument practice in human eye.	
7	Course Description	This course covers commonly used optometric instruments, its basic principle, description and usage in clinical practice	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Trial Set Lenses	CO1
	B	Phoropters	CO1
	C	Visual Acuity Checking instruments	CO1
	Unit 2		
	A	Retinoscope and Auto Refractometer	CO2
	B	Lensometer	CO2
	C	Slit Lamp Biomicroscope and Gonioscope	CO2
	Unit 3		
	A	Tonometer	CO3
	B	Perimeter	CO3
	C	Ophthalmoscope	CO3
	Unit 4		
	A	Corneal topography, Aberrometry	CO4,CO6
	B	Keratometer	CO4,CO6
	C	Electrodiagnostic instrument (ERG,VEP,EOG)	CO4,CO6
	Unit 5		
	A	Orthoptic Instruments(Synaptophore)	CO5,CO6

	B	Ultrasonography			CO5,CO6
	C	Ocular Imaging			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> • P R Yoder: Mounting Optics in Optical Instruments, SPIE Society of Photo-Optical Instrumentation, 2002 • G Smith, D A. Atchison: The Eye and Visual Optical Instruments, Cambridge University Press, 1997 			
	Other References	<ul style="list-style-type: none"> • David Henson: Optometric Instrumentations, Butterworth- Heinemann, UK, 1991 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	2	3	3	2	1
CO2	2	3	2	3	3	3	2	1
CO3	3	1	3	3	3	2	2	1
CO4	3	3	3	2	3	2	1	2
CO5	3	3	3	3	3	2	2	1
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.6	2.6	2.5	2.5	3	2.33	2	1.33

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2024-25	
Branch: Optometry		Semester: 4th	
1	Course Code	BOP262	
2	Course Title	Optometric Instruments LAB	
3	Credits	1	
4	Contact Hours (L)	2	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts of Optometric Instruments that would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1:Defininf, listing and learning the concept of instruments for visual acuity measurements CO2:Recognizing, understanding ,characterizing and explaining the various instruments for anterior segment measurements CO3: Identifying, locating and demonstrating the various types of Instruments for posterior segment measurements CO4: Performing, implementation and applying the Instruments for orthoptic measurements CO5: Analyzing, categorizing, comparing and differentiating the various Instruments for ocular imaging CO6 : Evaluate , understand and applying the various instrument practice in human eye	
7	Course Description	This course covers commonly used optometric instruments, its basic principle, description and usage in clinical practice	
8	Outline syllabus		CO Mapping
	Unit 1	Practical based on following:	
	A	Trial Set Lenses	CO1
	B	Visual Acuity Checking instruments	CO1
	C	Retinoscope	CO1
	Unit 2	Practical based on following:	
	A	Auto Refractometer	CO2
	B	Lensometer	CO2
	C	Slit-lamp	CO2
	Unit 3	Practical based on following:	
	A	Tonometer (Schiotz and Applanation)	CO3
	B	Perimeter	CO3
	C	Direct Ophthalmoscope	CO3
	Unit 4	Practical based on following:	
	A	Gonioscope	CO4,CO6
	B	Keratometer	CO4,CO6
	C	Corneal topography	CO4,CO6

	Unit 5	Practical based on following:			
	A	Synaptophore			CO5,CO6
	B	A-scan Ultrasonography			CO5,CO6
	C	Ocular Imaging (OCT, FFA)			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25	25	50	
	Text book/s*	<ul style="list-style-type: none"> P R Yoder: Mounting Optics in Optical Instruments, SPIE Society of Photo-Optical Instrumentation, 2002 G Smith, D A. Atchison: The Eye and Visual Optical Instruments, Cambridge University Press, 1997 			
	Other References	David Henson: Optometric Instrumentations, Butterworth- Heinemann, UK, 1991			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	2
CO2	3	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	1	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	2	3	3	2	3	2	3	2
Avg PO attained	2.8	3	2.8	2.8	3	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2024-25
Branch: Optometry		Semester: 4th
1	Course Code	BOP004
2	Course Title	Clinics-II
3	Credits	2
4	Contact Hours (P)	4
	Course Type	Compulsory
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts that would lay the foundation for their courses in the next semester.
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of human eye. CO3: Identifying, locating and demonstrating the various diseases of the human eye with the help of instruments. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases and their diagnostic tests. CO6 : Evaluate and understand type of diseases and their diagnostic tests.
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.
8	Outline syllabus	
	Unit 1	5 cases each of
	A	Slitlampbiomicroscopy;
	B	Direct Ophthalmoscopy;
	C	Indirect ophthalmoscopy;
	Unit 2	5cases each of
	A	Digital pressure;
	B	Schiotz Tonometry;
	C	Applanation Tonometry;
	Unit 3	5 cases each of
	A	Non-contact tonometry;
	B	Gonioscopy;
	C	Corneal Sensitivity;
	Unit 4	5 cases each of
	A	HVID;
	B	Keratometry;
	C	VVID;
	Unit 5	5 cases each of
	A	Saccades ;
		CO Mapping
		CO1
		CO1
		CO1
		CO2
		CO2
		CO2
		CO3
		CO3
		CO3
		CO4,CO6
		CO4,CO6
		CO4,CO6
		CO5,CO6

	B	Pursuits;			CO5,CO6
	C	Fundus examination by slit lamp biomicroscopy;			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25	25	50	
	Text book/s*	P R Yoder: Mounting Optics in Optical Instruments, SPIE Society of Photo-Optical Instrumentation, 2002 G Smith, D A. Atchison: The Eye and Visual Optical Instruments, Cambridge University Press, 1997			
	Other References	David Henson: Optometric Instrumentations, Butterworth- Heinemann, UK, 1991			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	2	3	3	3	2	3	2	3
CO4	3	2	3	3	3	2	3	3
CO5	2	3	2	3	3	2	3	2
CO6	3	3	2	2	2	2	2	3
Avg PO attained	2.5	2.83	2.5	2.6	2.6	2.3	2.6	2.83

School: SSAHS		Batch:2023-2027
Programme: BOP		
Branch: Optometry		Semester: 4th
1	Course Code	CCU108
2	Course Title	Community Connect
3	Credits	2
4	Contact Hours (L-T-P)	0-0-4
	Course Status	Compulsory
5	Course Objective	<p>1. The objective of assigning the project related to community work is to expose our students to different social issues faced by the people in different sections of society.</p> <p>2. This type of project work will help the students to develop better understanding of problems of people living in disadvantage position in the society, may be socially, medically, economically, or otherwise.</p> <p>3. This type of live project work will help our students to connect their class-room learning with practical issues/problems in the society.</p>
6	Course Outcomes	<p>Students will be able to:</p> <ol style="list-style-type: none"> CO1: Students develop awareness of the social, health, and environmental challenges faced by the community CO2: Students are more appreciative of socio-economic realities beyond textbooks and classrooms CO3: Students learn to apply their knowledge through research, awareness creation, and services for community benefit CO4: Students are able to carry out community-based projects with sincerity, teamwork and timely delivery CO5: Students learn to respectfully engage with communities with purposive intent to contribute to society and sustainable development CO6: Students are able to document and present their community project findings in an academically robust manner
7	Course Description	In Community Connect projects, students will learn how to identify problems of rural and underprivileged communities by conducting surveys, or will help the communities by providing services or solutions for the issues faced by them.
8	Outline syllabus	
	Unit 1	Team/Group formation and Project Assignment. Problem Definition & Finalizing the problem statement, Resource requirement, if any.
	Unit 2	Develop a useful questionnaire or service to the community that will aid in achieving the objectives of the project.
	Unit 3	Learn how to interact with the community members, whether in survey or service-based project – to help develop a more open mindset in the students.
	Unit 4	Analysis of survey data and/or impact on the community members.
		CO Mapping
		CO1, CO2
		CO2, CO3. CO4
		CO3, CO4, CO5
		CO3, CO4

	Unit 5	Demonstrate and justify their findings in light of the data they have gathered, or show the benefits to the community of the actions they have taken.			CO4, CO5, CO6
	Mode of examination	Practical /Viva			
	Weight age Distribution	CA	MTE	ETE	
		25%	25%	50%	

POs Cos	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1		1	1	2		<u>1</u>	<u>1</u>	<u>1</u>
CO2	1	2	1	3	<u>1</u>	<u>1</u>		
CO3	3	3	3	3	2	1	1	1
CO4		3	3	3			1	
CO5		2	1	1	1	1	1	1
CO6	2	3	1	1	3		2	1
Avg PO attained	1	2.3	1.7	2.3	1.16	0.66	1	0.66

School: SSAHS		Batch: 2023-2027
Programme: BOP		
Branch:		Semester: 4th semester
1	Course Code	INC001
2	Course Title	Faculty Student Industry Connect (FSIC)
3	Credits	2
4	Contact Hours (L-T-P)	0-0-4
	Course Status	Compulsory
5	Course Objective	To create a platform to enhance the industry-academia interaction To give exposure to the industry to our faculty members and students To bridge the gap between industry and academia
6	Course Outcomes	CO1: Enhanced role of the university across industries in the form of knowledge creation, learning, training, consultancy CO2: To give real-time exposure to our faculties about industry environment CO3: Developing an understanding of various real-time problems, latest updates, technological advancements, and best practices of the industry CO4: Establishing corporate connections and strong networking CO5: To make our students industry-ready. CO6: develop knowledge of industry research
7	Course Description	The university offers a Faculty-Student Industry Connect (FSIC) course for the holistic development and empowerment of students and faculties to gain more practical insights and exposure to the industry. FSIC will support the curriculum by amplifying, supplementing, and filling in the gaps related to industry exposure, if any. In addition, FSIC will help students and faculty to enrich their knowledge and skills about the various practices of the industry by making industry visits, working on live projects with the industry, and solving the real-time problems of the industry.
8	Outline syllabus	
	Guidelines: For Students: <ol style="list-style-type: none"> 1. It is mandatory for every student to get registered for the two-credit FSIC course offered by the school/department. 2. Students pursuing UG Programmes are required to enroll in this course in the 2nd or 3rd year. 3. Students pursuing PG Programmes are required to enroll in this course in the 2nd or 3rd semester. 4. Attendance for a minimum of two visits to the same industry/organization will be marked as a requisite for the completion of the FSIC course. Students will be required to submit geotagged pics for both visits. 	

		<p>5. As FSIC is a two-credit course, it is essential for students to clear/complete the FSIC course.</p> <p>6. A student shall be graded for the FSIC course.</p> <p>7. If a student fails in the FSIC course, the student will get the grade “F” and need to repeat the course with the succeeding batch. Only final-year students will be allowed to appear in the summer batch.</p> <p>8. The student shall be issued a course completion certificate by the school/department after Passing the course.</p> <p>II. For School/Department:</p> <p>1. Individual schools/departments must appoint an FSIC coordinator for the smooth Functioning of the FSIC course at the school/departmental level.</p> <p>2. The FSIC is mandatory for all the non-council courses but even then for council based courses this course may be given as Value Added Course (VAC)</p> <p>3. The school/department FSIC coordinator should ensure students’ enrolment in the FSIC course.</p> <p>4. Industry/organization visit slots must be mapped on the timetable. The slot can be given on iCloud if the specific visit by any team should be intimated to the FSIC coordinator, one week in advance.</p> <p>5. The FSIC coordinator will allot a minimum of 2-3 students to every faculty member of the school/department.</p> <p>6. The FSIC coordinator will ensure that every faculty member with their allotted students must visit a minimum twice the same industry/organization to get better insights into the industry/organization.</p> <p>7. The school/department should get it mapped FSIC on PeopleSoft.</p> <p>8. FSIC course details along with an evaluation scheme must be designed for this course.</p> <p>9. For the FSIC course, course outcomes (COs) must be created and mapped with POs & PSOs of the Programme. Approval is required from the Office of the Dean of Academic Affairs.</p> <p>10. FSIC brochure must be prepared by the school/department.</p> <p>11. Attendance records and assessment records should be maintained properly and on a regular basis.</p> <p>12. The school/department FSIC coordinator must inform students about the requisites (regular attendance and passing the exam) for the completion of the course.</p> <p>13. On completion of the course, students will be issued a course completion certificate.</p> <p>14. The FSIC Course Execution Process.</p>						
Mode of examination		Practical /Viva						
Weightage Distribution		Continuous Evaluation (CE)				Industry Visit Report		Viva – Voce
		80 %				10 %		10 %
PO CO	PO1	PO2	PO3	PO4	PO5	<u>PSO1</u>	<u>PSO2</u>	<u>PSO3</u>
CO1	1	1	2	3	2	3	1	1
CO2	2	1	2		1	2	2	2
CO3		1	1	2	3	1		1



CO4	2	3	1	3	2	3	2	
CO5	2	2		1	2	2	3	1
CO6	1	2	2		2	1	1	2
Avg PO attained	1.33	1.66	1.33	1.66	2	2	1.5	1.16

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2025-2026
Branch: Optometry		Semester: 5th
1	Course Code	BOP310
2	Course Title	Contact Lens-I
3	Credits	4
4	Contact Hours (L+T)	3+1
	Course Type	Compulsory
5	Course Objective	Understand the basics of contact lenses; List the important properties of contact lenses; Finalise the CL design for various kinds' patients; Recognize various types of fitting; Explain all the procedures to patient; Identify and manage the adverse effects of contact lens
6	Course Outcomes	CO1: Defining, listing and learning the types of contact lens. CO2: Recognizing, Understanding, characterizing, explaining the contact lens in therapeutic and diagnostic use in different ocular condition. CO3: Identifying, locating and demonstrating the concept of basic principles of using contact lenses to treat and manage the ocular abnormalities. CO4: Performing, implementing and applying the types of contact lenses and fitting criteria. CO5: Analyzing, categorizing, comparing and differentiating various types of contact lens. CO6 : Evaluate , understand and applying the various various types of contact lens.
7	Course Description	The subject provides the student with suitable knowledge both in theoretical and practical aspects of Contact Lenses.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Introduction to Contact lenses; Definition; Classification / Types; History of Contact Lenses
	B	Optics of Contact Lenses: Magnification & Visual field; Accommodation & Convergence; Back & Front Vertex Power / Vertex distance calculation
	C	Review of Anatomy & Physiology of: Tear film; Cornea; Lids & Conjunctiva
	Unit 2	
	A	Introduction to CL materials: Monomers; Polymers
	B	Properties of CL materials: Physiological (Dk, Ionicity, Water content); Physical (Elasticity, Tensile strength, Rigidity); Optical (Transmission, Refractive index)
	C	Indications and contraindications; Parameters / Designs of Contact Lenses & Terminology
	Unit 3	
	A	RGP Contact Lens materials; Manufacturing Rigid and Soft Contact Lenses – various methods
	B	Pre-Fitting examination – steps, significance, recording of results; Correction of Astigmatism with RGP lens

	C	Types of fit – Steep, Flat, Optimum – on spherical cornea with spherical lenses			CO3
	Unit 4				
	A	Types of fit – Steep, Flat, Optimum – on Toric cornea with spherical lenses			CO4,CO6
	B	Calculation and finalising Contact lens parameters; Ordering Rigid Contact Lenses – writing a prescription to the Laboratory			CO4,CO6
	C	Checking and verifying Contact lenses from Laboratory; Modifications possible with Rigid lenses			CO4,CO6
	Unit 5				
	A	Common Handling Instructions: Insertion & Removal Techniques; Do's and Dont's			CO5,CO6
	B	Care and Maintenance of Rigid lenses: Cleaning agents & Importance; Rinsing agents & Importance; Disinfecting agents & importance; Lubricating & Enzymatic cleaners			CO5,CO6
	C	Follow up visit examination; Complications of RGP lenses			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> IACLE modules 1 – 5; CLAO Volumes 1, 2, 3 Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006 Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 E S. Bennett ,V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008; Contact lens Primer :Jaypee Bros : Monica Chaudhry 			
	Other References	<ul style="list-style-type: none"> Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	1	3	1	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	2	3	2	2	3	2	3
CO4	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.33	2.8	2.16	2.6	2.8	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2025-2026
Branch: Optometry		Semester: 5th
1	Course Code	BOP355
2	Course Title	Contact Lens-I (LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	Understand the basics of contact lenses; List the important properties of contact lenses; Finalise the CL design for various kinds' patients; Recognize various types of fitting; Explain all the procedures to patient; Identify and manage the adverse effects of contact lens
6	Course Outcomes	CO1: Defining, listing and learning the types of contact lens. CO2: Recognizing, Understanding, characterizing, explaining the contact lens in therapeutic and diagnostic use in different ocular condition. CO3: Identifying, locating and demonstrating the concept of basic principles of using contact lenses to treat and manage the ocular abnormalities. CO4: Performing, implementing and applying the types of contact lenses and fitting criteria. CO5: Analyzing, categorizing, comparing and differentiating various types of contact lens. CO6 : Evaluate , understand and applying the various various types of contact lens.
7	Course Description	The subject provides the student with suitable knowledge both in theoretical and practical aspects of Contact Lenses.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	History Taking role plays
	B	Measurement of Ocular dimensions;
	C	Pupillary diameter and lid characteristics; Blink rate and TBUT
	Unit 2	
	A	Schrimers test, Slit lamp examination of tear layer
	B	Keratometry; Placido's disc
	C	Soft Contact Lens fitting – Aspherical
	Unit 3	
	A	Soft Contact Lens fitting – Lathecut lenses; Soft Contact Lens over refraction
	B	Lens insertion and removal
	C	Lens handling and cleaning
	Unit 4	
	A	Examination of old soft Lens
	B	RGP Lens fitting; RGP Lens Fit Assessment and fluorescein pattern
	C	Special RGP fitting (Aphakia, pseudo phakia & Keratoconus)

	Unit 5				
	A	RGP over refraction and Lens flexure			CO5,CO6
	B	Examination of old RGP Lens; RGP Lens parameters			CO5,CO6
	C	Slit lamp examination of Contact Lens wearers			CO5,CO6
	Mode of examination	Practical			
	Weightage	CA	Viva-voce	ETE	
	Distribution	25	25	50	
	Text book/s*	<ul style="list-style-type: none"> IACLE modules 1 - 5 □ CLAO Volumes 1, 2, 3 Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006 Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 E S. Bennett ,V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008 □ Contact lens Primer :Jaypee Bros : Monica Chaudhry 			
	Other References	<ul style="list-style-type: none"> Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2
CO2	2	3	2	3	3	2	3	2
CO3	3	3	3	3	2	3	1	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	2	3	3	2
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.8	3	2.3	2.8	2.5	2.5	2.5	2.3

School: SSAHS	Batch : 2023-2027
Programme: BOP	Current Academic Year: 2025-2026

Branch: Optometry		Semester: 5 th	
1	Course Code	BOP311	
2	Course Title	Low Vision and Rehabilitation	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	Definition and epidemiology of Low Vision 2. Clinical examination of Low vision subjects 3. Optical, Non-Optical, Electronic, and Assistive devices. 4. Training for Low Vision subjects with Low vision devices 5. Referrals and follow-up	
6	Course Outcomes	CO1: Defining, listing and learning the types of low vision aids. CO2: Recognizing, Understanding, characterizing, explaining the use of low vision aids and rehabilitation. CO3: Identifying, locating and demonstrating the concept of basic principles of optics in management of low vision patients. CO4: Performing, implementing and applying types of low vision aids and rehabilitation techniques. CO5: Analyzing, categorizing, comparing and differentiating various types of low vision devices. CO6 : Evaluate , understand and applying the various types of low vision devices.	
7	Course Description	This course deal with the definition of low vision, epidemiology aspect of visual impairment, types of low vision devices and its optical principles, clinical approach of the low vision patients, assistive devices for totally visually challenged, art of prescribing low vision devices and training the low vision patients and other rehabilitation measures.	
8	Outline syllabus		CO Mapping
	Unit 1	Introduction	
	A	Definitions & classification of Low vision;	CO1
	B	Epidemiology of low vision [magnitude];	CO1
	C	Pre-clinical evaluation of low vision patients ;functional needs assessment, prognostic & psychological factors; psycho-social impact of low vision;	CO1
	Unit 2		
	A	Types of low vision aids – optical aids; non-optical aids ; electronic devices;	CO2
	B	Assistive technology devices;	CO2
	C	Optics of low vision aids;	CO2
	Unit 3		
	A	Clinical evaluation – assessment of visual acuity, visual field;	CO3
	B	Selection of low vision aids, instruction & training ;	CO3
	C	Pediatric Low Vision care;	CO3
	Unit 4		
	A	Low vision aids – dispensing & prescribing aspects;	CO4,CO6
	B	Visual rehabilitation & counseling ;	CO4,CO6
	C	Legal aspects of Low vision in India; Eye Disorders & Low vision;	CO4,CO6

	Unit 5	Rehabilitation			
	A	Model of Low Vision services in India;			CO5,CO6
	B	Introduction to Optometry rehabilitation Practice;			CO5,CO6
	C	Clinical Case Presentation;			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> Christine Dickinson: Low Vision: Principles and Practice Low vision care, 4th edition, ButterworthHeinemann, 1998 Low vision : jaypee Bros : Monica Chaudhry E Vaithilingam: practice of Low vision – A guide book, Medical Research Foundation, 2000. 			
	Other References	<ul style="list-style-type: none"> Richard L. Brilliant: Essentials of Low Vision Practice, Butterworth-Heinemann, 1999 Helen Farral: optometric Management of Visual Handicap, Blackwell Scientific publications, 1991 □ A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinnemann, 2007 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	3	2	2
CO2	3	3	2	3	3	2	3	2
CO3	2	3	3	3	2	3	1	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	3	3	2	2	2	2	3	2
Avg PO attained	2.6	3	2.6	2.6	2.6	2.5	2.5	2.3

Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 5th	
1	Course Code	BOP356	
2	Course Title	Low Vision and Rehabilitation (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Definition and epidemiology of Low Vision 2. Clinical examination of Low vision subjects 3. Optical, Non-Optical, Electronic, and Assistive devices. 4. Training for Low Vision subjects with Low vision devices 5. Referrals and follow-up	
6	Course Outcomes	CO1: Defining, listing and learning the types of low vision aids. CO2: Recognizing, Understanding, characterizing, explaining the use of low vision aids and rehabilitation. CO3: Identifying, locating and demonstrating the concept of basic principles of optics in management of low vision patients. CO4: Performing, implementing and applying types of low vision aids and rehabilitation techniques. CO5: Analyzing, categorizing, comparing and differentiating various types of low vision devices. CO6 : Evaluate , understand and applying the various types of low vision devices.	
7	Course Description	This course deal with the definition of low vision, epidemiology aspect of visual impairment, types of low vision devices and its optical principles, clinical approach of the low vision patients, assistive devices for totally visually challenged, art of prescribing low vision devices and training the low vision patients and other rehabilitation measures.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Attending a low vision care clinic	CO1
	B	History taking of low vision patient	CO1
	C	Determining the type of telescope and its magnification (Direct comparison method & calculated method)	CO1
	Unit 2		
	A	Determining the change in field of view with different magnification and different eye to lens distances with telescopes and magnifiers;	CO2
	B	Inducing visual impairment and prescribing magnification;	CO2
	C	Evaluation of low vision patient;	CO2
	Unit 3		
	A	Prescribing optical devices [How to use];	CO3
	B	Prescribing of non-optical devices [how to use them];	CO3
	C	Prescribing electronic devices [how to use them];	CO3
	Unit 4		
	A	Determining reading speed with different types of low vision aids with same magnification;	CO4,CO6
	B	Determining reading speed with a low vision aid of different magnifications;	CO4,CO6

	C	Report on disability networks in India;			CO4,CO6
	Unit 5				
	A	Visit to blind school and rehabilitation centers;			CO5,CO6
	B	Establishing a low vision in clinic;			CO5,CO6
	C	Visit to clinics and prepare report on low vision patients;			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> Christine Dickinson: Low Vision: Principles and Practice Low vision care, 4th edition, ButterworthHeinemann, 1998 Low vision : jaypee Bros : Monica Chaudhry E Vaithilingam: practice of Low vision – A guide book, Medical Research Foundation, 2000. 			
	Other References	<ul style="list-style-type: none"> Richard L. Brilliant: Essentials of Low Vision Practice, Butterworth-Heinemann, 1999 Helen Farral: optometric Management of Visual Handicap, Blackwell Scientific publications, 1991 □ A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinnemann, 2007 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	3	3	2	3	3	3	3	3
Avg PO attained	3	3	2.5	3	3	2	2.33	2.83

School: SSAHS	Batch : 2023-2027
Programme: BOP	Current Academic Year: 2025-2026

Branch: Optometry		Semester: 5th
1	Course Code	BOP312
2	Course Title	Public Health Community & Occupational Optometry
3	Credits	2
4	Contact Hours (L)	2
	Course Type	Compulsory
5	Course Objective	<p>1. Community based eye care in India. 2. Prevalence of various eye diseases 3. Developing Information Education Communication materials on eye and vision care for the benefit of the public 4. Organize health education Programmes in the community 5. Vision screening for various eye diseases in the community and for different age groups</p> <p>1. In visual requirements of jobs; 2. In effects of physical, chemical and other hazards on eye and vision; 3. To identify occupational causes of visual and eye problems; 4. To be able to prescribe suitable corrective lenses and eye protective wear and 5. To set visual requirements, standards for different jobs.</p>
6	Course Outcomes	<p>CO1: Defining, listing and learning the main role of optometrist in the community health care profession.</p> <p>CO2: Recognizing, Understanding, characterizing, explaining those diseases that are the most common reason for worldwide blindness.</p> <p>CO3: Identifying, locating and demonstrating the management and treatment skills to eradicate avoidable blindness from worldwide population.</p> <p>CO4: Performing, implementing and applying the types of health care Programmes that can avoid the blindness and visual impairment.</p> <p>CO5: Analyzing, categorizing, comparing and differentiating various diseases that are the most common reason for worldwide blindness.</p> <p>CO6 : Evaluate , understand and applying the various diseases that are the most common reason for worldwide blindness</p>
7	Course Description	<p>Introduction to the foundation and basic sciences of public health optometry with an emphasis on the epidemiology of vision problems especially focused on Indian scenario.</p> <p>Also deals with general aspects of occupational health, Visual demand in various job, task analysing method ,visual standards for various jobs , occupational hazards and remedial aspects through classroom sessions and field visit to the factories.</p>
8	Outline syllabus	CO Mapping
	Unit 1	Public Health Optometry
	A	Concepts and implementation; Stages of diseases; Dimensions;determinants and indicators of health; Levels of disease prevention and levels of health care patterns ;
	B	Epidemiology of blindness – Defining blindness and visual impairment; Eye in primary health care; Contrasting between Clinical and community health Programmes;
	C	Community Eye Care Programmes; Community based rehabilitation Programmes; Nutritional Blindness with reference to Vitamin A deficiency;
	Unit 2	

	A	Vision 2020: The Right to Sight; Screening for eye diseases; National and International health agencies, NPCB; Role of an optometrist in Public Health;	CO2						
	B	Organization and Management of Eye Care Programmes – Service Delivery models; Health manpower and planning & Health Economics; Evaluation and assessment of health Programmes;	CO2						
	C	Optometrists’ role in school eye health Programmes; Basics of Tele Optometry and its application in Public Health; Information, Education and Communication for Eye Care Programmes;	CO2						
	Unit 3	Occupational Optometry							
	A	Introduction to Occupational health; hygiene and safety; international bodies like ILO; WHO, National bodies etc Acts and Rules - Factories Act;WCA, and ESI Act;	CO3						
	B	Electromagnetic Radiation and its effects on Eye;	CO3						
	C	Light – Definitions and units, Sources, advantages and disadvantages, standards; Color – Definition, Color theory, Color coding, Color defects, Color Vision tests;	CO3						
	Unit 4								
	A	Occupational hazards and preventive/protective methods;	CO4,CO6						
	B	Task Analysis;	CO4,CO6						
	C	Industrial Vision Screening – Modified clinical method; Industrial Vision test;	CO4,CO6						
	Unit 5								
	A	Vision Standards – Railways, Roadways, Airlines	CO5,CO6						
	B	Visual Display Units	CO5,CO6						
	C	Contact lens and work	CO5,CO6						
	Mode of examination	Theory							
	Weightage Distribution	<table><tr><td>CA</td><td>MTE</td><td>ETE</td></tr><tr><td>25%</td><td>25%</td><td>50%</td></tr></table>	CA	MTE	ETE	25%	25%	50%	
CA	MTE	ETE							
25%	25%	50%							
	Text book/s*	<ul style="list-style-type: none">R V North: Work and the eye, Second edition, Butterworth Heinemann, 2001BHVI student notesGVS Murthy, S K Gupta, D Bachani: The principles and practice of community Ophthalmology, National Programme for control of blindness, New Delhi, 2002Newcomb RD, Jolley JL : Public Health and Community Optometry, Charles C Thomas Publisher, Illinois, 1980Community eye health journals							
	Other References	<ul style="list-style-type: none">G W Good: Occupational Vision Manual available in the following website: www.aoa.org							

		<ul style="list-style-type: none"> • N.A. Smith:Lighting for Occupational Optometry, HHSC Handbook Series, Safchem Services, 1999 • G Carson, S Doshi, W Harvey:Eye Essentials: Environmental & Occupational Optometry, ButterworthHeinemann, 2008 • The Eye and Sports Medicine Manual/International Academy of Sports Vision • Illinois College of Optometry Sports Vision Manual • International Academy of Sports Vision-Sports Vision Manual 	
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	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	1	3	3	3	3	3	2	3
CO4	3	3	1	3	3	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.16	3	2	2.8	2.8	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 5th	
1	Course Code	BOP313	
2	Course Title	Binocular Vision-I	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	Demonstrate an in-depth knowledge of the gross anatomy and physiology relating to the extraocular muscles; Provide a detailed explanation of, and differentiate between the etiology, investigation and management of binocular vision anomalies; Adapt skills and interpret clinical results following investigation of binocular vision anomalies appropriately and safely.	
6	Course Outcomes	CO1: Defining, listing and learning the grades of binocular vision. CO2: Recognizing, Understanding, characterizing, explaining the kind of binocular vision anomalies present in patient eye. CO3: Identifying, locating and demonstrating the principles of binocular vision in early diagnosis and treatment. CO4: Performing, implementing and applying the types of binocular abnormalities on the basis of symptoms, signs and diagnostic procedure. CO5: Analyzing, categorizing, comparing and differentiating various grade of binocular vision. CO6 : Evaluate , understand and applying the various grade of binocular vision.	
7	Course Description	This course provides theoretical aspects of Binocular Vision and its clinical application. It deals with basis of normal binocular vision and space perception, Gross anatomy and physiology of extraocular muscles, various binocular vision anomalies, its diagnostic approaches and management.	
8	Outline syllabus		CO Mapping
	Unit 1	Binocular Vision and Space perception	
	A	Relative subjective visual direction; Retino motor value; Grades of BSV; SMP and Cyclopean Eye; Correspondence,; Fusion, Diplopia, Retinal rivalry	CO1
	B	Hopter; Physiological Diplopia and Suppression; Stereopsis, Panum's area, BSV; Stereopsis and monocular clues – significance	CO1
	C	Egocentric location, clinical applications; Theories of Binocular vision	CO1
	Unit 2		
	A	Anatomy of Extra Ocular Muscles: Rectii and Obliques, LPS; Innervation & Blood Supply.	CO2
	B	Physiology of Ocular movements: Center of rotation, Axes of Fick; Action of individual muscle.	CO2
	C	Laws of ocular motility: Donder's and Listing's law; Sherrington's law; Hering's law	CO2
	Unit 3		
	A	Uniocular& Binocular movements - fixation, saccadic & pursuits; Version & Vergence; Fixation & field of fixation	CO3

	B	Near Vision Complex Accommodation 6.1 Definition and mechanism (process); Methods of measurement			CO3
	C	Stimulus and innervations; Types of accommodation; Anomalies of accommodation – aetiology and management.			CO3
	Unit 4				
	A	Convergence: Definition and mechanism; Methods of measurement; Types and components of convergence - Tonic, accommodative, fusional, proximal; Anomalies of Convergence – aetiology and management.			CO4,CO6
	B	Sensory adaptations: Confusion			CO4,CO6
	C	Suppression: Investigations; Management; Blind spot syndrome			CO4,CO6
	Unit 5				
	A	Abnormal Retinal Correspondence: Investigation and management; Blind spot syndrome			CO5,CO6
	B	Eccentric Fixation: Investigation and management			CO5,CO6
	C	Amblyopia: Classification; Aetiology; Investigation; Management			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company			
	Other References	Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular Vision Heterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincott Williams & Wilkins publisher			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	2	3	3	2	2
CO2	2	3	2	3	3	2	3	2
CO3	3	3	3	2	3	3	1	3
CO4	3	3	3	3	2	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	2	3	3	2	3	2	3	2
Avg PO attained	2.6	2.8	2.8	2.5	2.8	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 5th	
1	Course Code	BOP357	
2	Course Title	Binocular Vision-I (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Demonstrate an in-depth knowledge of the gross anatomy and physiology relating to the extraocular muscles; Provide a detailed explanation of, and differentiate between the etiology, investigation and management of binocular vision anomalies; Adapt skills and interpret clinical results following investigation of binocular vision anomalies appropriately and safely.	
6	Course Outcomes	CO1: Defining, listing and learning the grades of binocular vision. CO2: Recognizing, Understanding, characterizing, explaining the kind of binocular vision anomalies present in patient eye. CO3: Identifying, locating and demonstrating the principles of binocular vision in early diagnosis and treatment. CO4: Performing, implementing and applying the types of binocular abnormalities on the basis of symptoms, signs and diagnostic procedure. CO5: Analyzing, categorizing, comparing and differentiating various grade of binocular vision. CO6 : Evaluate , understand and applying the various grade of binocular vision.	
7	Course Description	This course provides theoretical aspects of Binocular Vision and its clinical application. It deals with basis of normal binocular vision and space perception, Gross anatomy and physiology of extraocular muscles, various binocular vision anomalies, its diagnostic approaches and management.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Binocular vision assessment	CO1
	B	Stereopsis evaluation	CO1
	C	Measurement of NPC and NPA	CO1
	Unit 2		
	A	Measurement of AC/A Ratio	CO2
	B	Convergence insufficiency and management of cases	CO2
	C	Measurement of convergence	CO2
	Unit 3		
	A	ARC- case discussion	CO3
	B	Eccentric fixation –Diagnosis and discussion	CO3
	C	ARC	CO3
	Unit 4		
	A	Amblyopia management –case presentation	CO4,CO6
	B	Amblyopia management –case presentation	CO4,CO6
	C	Amblyopia management –case presentation	CO4,CO6

	Unit 5		
	A	Amblyopia management –case presentation	CO5,CO6
	B	Amblyopia management –case presentation	CO5,CO6
	C	Amblyopia management –case presentation	CO5,CO6
	Mode of examination	Practical	
	Weightage	CA	Viva-voce
	Distribution	25	50
	Text book/s*	Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company	
	Other References	Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular Vision Heterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincot Williams & Wilkins publisher	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	3	3	3	2	2
CO2	2	3	2	3	3	2	3	2
CO3	3	1	3	3	1	3	1	3
CO4	3	3	3	3	3	2	3	3
CO5	3	2	3	3	3	3	3	2
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.8	2.33	2.6	2.8	2.6	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2025-2026
Branch: Optometry		Semester: 5th
1	Course Code	BOP320
2	Course Title	Disease of Eye and Clinical Medicine
3	Credits	3
4	Contact Hours (L)	3
	Course Type	Compulsory
5	Course Objective	Common Systemic conditions: Definition, diagnostic approach, complications and management options; Ocular findings of the systemic conditions; First Aid knowledge
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of anterior segment of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of anterior segment of human eye. CO3: Identifying, locating and demonstrating the various diseases of anterior segment of the human eye. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases. CO6 : Evaluate , understand and applying the various types of diseases.
7	Course Description	This course deals with definition, classification, clinical diagnosis, complications and management of various systemic diseases. Its indicated cases ocular manifestations also will be discussed.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Hypertension – Definition, classification, Epidemiology, clinical examination, complications, and management.; Hypertensive retinopathy
	B	Diabetes Mellitus – Classification, pathophysiology, clinical presentations, diagnosis, and management, Complications; Diabetic Retinopathy
	C	Thyroid Disease - Physiology, testing for thyroid disease, Hyperthyroidism, Hypothyroidism, Thyroiditis, Thyroid tumors; Grave's Ophthalmopathy;
	Unit 2	
	A	Acquired Heart Disease : Ischemic Heart Disease, Congestive heart failure, Disorders of cardiac rhythm, Ophthalmic considerations
	B	Cancer: Incidence; Etiology; Therapy; Ophthalmologic considerations
	C	Connective Tissue Disease: Rheumatic arthritis; Systemic lupus erythematosus; Scleroderma; Sjogren

		syndrome; Behcet’s syndrome; Eye and connective tissue disease			
	Unit 3				
	A	Tuberculosis – Aetiology, pathology, clinical features, pulmonary tuberculosis, diagnosis, complications, treatment tuberculosis and the eye.	CO3		
	B	Herpes virus: Herpes simplex, Varicella Zoster, Cytomegalovirus; Herpes and the eye	CO3		
	C	Hepatitis (Hepatitis A, B, C)	CO3		
	Unit 4				
	A	Acquired Immunodeficiency Syndrome	CO4,CO6		
	B	Anemia (Diagnosis, clinical evaluation, consequences, Sickle cell disease, treatment, Ophthalmologic considerations)	CO4,CO6		
	C	Common Tropical Medical Ailments: Malaria; Typhoid; Dengue; Filariases; Onchocerciasis; Leprosy	CO4,CO6		
	Unit 5				
	A	Nutritional and Metabolic disorders: Obesity; Hyperlipidaemia; Vitamin A Deficiency; Vitamin D Deficiency; Vitamin E Deficiency; Vitamin K Deficiency; Vitamin B1,B2, Deficiency; Vitamin C Deficiency	CO5,CO6		
	B	Myasthenia Gravis; Marfan’s Syndrome	CO5,CO6		
	C	First Aid: General Medical Emergencies; Preoperative precautions in ocular surgeries	CO5,CO6		
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	C Haslett, E R Chilvers, N A boon, N R Coledge, J A A Hunter: Davidson's Principles and Practice of Medicine, Ed. John Macleod, 19 th Ed., ELBS/Churchill Livingstone. (PPM), 2002			
	Other References	Basic and clinical Science course: Update on General Medicine, American Academy ofOphthalmology, Section 1, 1999			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	1	3	3	1	3	3	3	3
CO2	1	3	2	3	3	2	3	3
CO3	3	2	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.33	2.8	2	2.8	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP315	
2	Course Title	Contact Lens-II	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	1. Understand the basics of contact lenses 2. List the important properties of contact lenses 3. Finalize the CL design for various kind of patients 4. Recognize various types of fitting 5. Explain all the procedures to patient 6. Identify and manage the adverse effects of contact lens	
6	Course Outcomes	CO1: Defining, listing and learning the types of contact lens. CO2: Recognizing, Understanding, characterizing, explaining the contact lens in therapeutic and diagnostic use in different ocular condition. CO3: Identifying, locating and demonstrating the concept of basic principles of using contact lenses to treat and manage the ocular abnormalities. CO4: Performing, implementing and applying the types of contact lenses and fitting criteria. CO5: Analyzing, categorizing, comparing and differentiating various types of contact lens. CO6 : Evaluate , understand and applying the various types of contact lens	
7	Course Description	The subject provides the student with suitable knowledge both in theoretical and practical aspects of Contact Lenses.	
8	Outline syllabus		CO Mapping
	Unit 1	Prefitting examination	
	A	Review of Basics	CO1
	B	Patient Selection; Pre screening for contact lens wear	CO1
	C	Slit Lamp examination; Assessment of Cornea □ Assessment of Tear film	CO1
	Unit 2	Module II: Contact lens fitting	
	A	Soft contact lens fitting	CO2
	B	Soft Toric Contact Lens fitting	CO2
	C	Rigid Contact lens fitting; Managing the Presbyope	CO2
	Unit 3	Module III: Extended wear contact lens	
	A	Cornea and Oxygen	CO3
	B	Extended Wear	CO3

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	C	Silicone Hydrogel Lenses			CO3
	Unit 4	Module IV: Contact lens care			
	A	Contact lens After Care			CO4,CO6
	B	Contact lens Care System1			CO4,CO6
	C	Contact lens Care System2			CO4,CO6
	Unit 5	Module V: Speciality contact lens			
	A	Therapeutic and Prosthetic contact lenses			CO5,CO6
	B	Overview of Special considerations for fitting contact lenses			CO5,CO6
	C	Business Aspects of Contact lens practice; Setting up a Contact lens clinics			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none">IACLE modules 1 - 5 □ CLAO Volumes 1, 2, 3Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004E S. Bennett ,V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008 □ Contact lens Primer :Jaypee Bros : Monica Chaudhry			
	Other References	<ul style="list-style-type: none">Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	1	3	3	3	3	3	2	3
CO4	3	1	3	3	2	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.5	2.6	2.5	2.8	2.8	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027
Programme: BOP		Current Academic Year: 2025-2026
Branch: Optometry		Semester: 6th
1	Course Code	BOP358
2	Course Title	Contact Lens-II (LAB)
3	Credits	1
4	Contact Hours (P)	2
	Course Type	Compulsory
5	Course Objective	1. Understand the basics of contact lenses 2. List the important properties of contact lenses 3. Finalize the CL design for various kind of patients 4. Recognize various types of fitting 5. Explain all the procedures to patient 6. Identify and manage the adverse effects of contact lens
6	Course Outcomes	CO1: Defining, listing and learning the types of contact lens. CO2: Recognizing, Understanding, characterizing, explaining the contact lens in therapeutic and diagnostic use in different ocular condition. CO3: Identifying, locating and demonstrating the concept of basic principles of using contact lenses to treat and manage the ocular abnormalities. CO4: Performing, implementing and applying the types of contact lenses and fitting criteria. CO5: Analyzing, categorizing, comparing and differentiating various types of contact lens. CO6 : Evaluate , understand and applying the various types of contact lens
7	Course Description	The subject provides the student with suitable knowledge both in theoretical and practical aspects of Contact Lenses.
8	Outline syllabus	CO Mapping
	Unit 1	
	A	Pre fitting evaluation
	B	SCL insertion & Removal
	C	Fitting assessment
	Unit 2	
	A	Over refraction
	B	Follow-up Examination
	C	Toric contact lens fitting and assessment; Cosmetic contact lens fitting and assessment
	Unit 3	
	A	Do's and don'ts for contact lenses
	B	Care and maintenance
	C	Special instructions for silicone hydrogels
	Unit 4	
	A	Demonstration for bifocal ,multifocal lenses, scleral lenses, Orthokeratology
	B	RGP insertion and removal

	C	Fitting assessment and Fluorescein pattern			CO4,CO6
	Unit 5				
	A	Slit-lamp examination of contact lens wearer			CO5,CO6
	B	Video preparations (components of Practical exam)			CO5,CO6
	C	Case Presentations (components of Practical exam)			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	<ul style="list-style-type: none"> IACLE modules 1 - 5 □ CLAO Volumes 1, 2, 3 Anthony J. Phillips : Contact Lenses, 5th edition, Butterworth-Heinemann, 2006 Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 E S. Bennett ,V A Henry :Clinical manual of Contact Lenses, 3rd edition, Lippincott Williams and Wilkins, 2008 □ Contact lens Primer :Jaypee Bros : Monica Chaudhry 			
	Other References	<ul style="list-style-type: none"> Elisabeth A. W. Millis: Medical Contact Lens Practice, Butterworth-Heinemann, 2004 			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	2	3	2	3	3	3
CO2	2	3	2	3	3	2	3	3
CO3	3	1	3	2	2	3	2	3
CO4	2	3	3	3	3	2	3	3
CO5	3	3	2	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.5	2.5	2.3	2.6	2.6	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP316	
2	Course Title	Binocular Vision-II	
3	Credits	4	
4	Contact Hours (L+T)	3+1	
	Course Type	Compulsory	
5	Course Objective	To inculcate the student with the knowledge of different types of strabismus its etiology signs and symptoms, necessary investigations and also management. The student on completion of the course should be able to independently investigate and diagnose case of strabismus with comments in respect to retinal correspondence and binocular single vision. The student should be able to perform all the investigations to check retinal correspondence, state of Binocular Single Vision, angle of deviation and special investigations for paralytic strabismus.	
6	Course Outcomes	CO1: Defining, listing and learning the grades of binocular vision. CO2: Recognizing, Understanding, characterizing, explaining the kind of binocular vision anomalies present in patient eye. CO3: Identifying, locating and demonstrating the principles of binocular vision in early diagnosis and treatment. CO4: Performing, implementing and applying the types of binocular abnormalities on the basis of symptoms, signs and diagnostic procedure. CO5: Analyzing, categorizing, comparing and differentiating various grade of binocular vision. CO6 : Evaluate , understand and applying the various grade of binocular vision.	
7	Course Description	This course deals with understanding of strabismus, its classification, necessary orthoptic investigations, diagnosis and non-surgical management. Along with theoretical knowledge it teaches the clinical aspects and application	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Neuro-muscular anomalies; Classification and etiological factors	CO1
	B	History – recording and significance	CO1
	C	Accommodative convergent squint; Classification; Investigation and Management	CO1
	Unit 2		
	A	Non accommodative Convergent squint: Classification; Investigation and Management	CO2
	B	Divergent Strabismus: Classification; A& V phenomenon; Investigation and Management	CO2
	C	Vertical strabismus: Classification; Investigation and Management	CO2
	Unit 3		
	A	Paralytic Strabismus: Acquired and Congenital; Clinical Characteristics	CO3

	B	Distinction from comitant and restrictive Squint			CO3
	C	Investigations: History and symptoms; Head Posture; Diplopia Charting; Hess chart; PBCT; Nine directions; Binocular field of vision			CO3
	Unit 4				
	A	Amblyopia and Treatment of Amblyopia			CO4,CO6
	B	Nystagmus			CO4,CO6
	C	Non-surgical Management of Squint			CO4,CO6
	Unit 5	Restrictive Strabismus			
	A	Features; Musculo-fascical anomalies; Duane’s Retraction syndrome; Clinical features and management			CO5,CO6
	B	Brown’s Superior oblique sheath syndrome; Strabismus fixus; Congenital muscle fibrosis			CO5,CO6
	C	Surgical management			CO5,CO6
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50%	
	Text book/s*	Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd Gunter K. Von Noorden: BURIAN- VON NOORDEN’S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company			
	Other References	Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular VisionHeterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincot Williams & Wilkins publisher			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	1	3	2	3	3	2	2
CO2	3	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	1	3
CO4	3	3	2	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	2	3	3	2	1	2	3	2
Avg PO attained	2.8	2.6	2.6	2.6	2.6	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP359	
2	Course Title	Binocular Vision-II (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	To inculcate the student with the knowledge of different types of strabismus its etiology signs and symptoms, necessary investigations and also management. The student on completion of the course should be able to independently investigate and diagnose case of strabismus with comments in respect to retinal correspondence and binocular single vision. The student should be able to perform all the investigations to check retinal correspondence, state of Binocular Single Vision, angle of deviation and special investigations for paralytic strabismus.	
6	Course Outcomes	CO1: Defining, listing and learning the grades of binocular vision. CO2: Recognizing, Understanding, characterizing, explaining the kind of binocular vision anomalies present in patient eye. CO3: Identifying, locating and demonstrating the principles of binocular vision in early diagnosis and treatment. CO4: Performing, implementing and applying the types of binocular abnormalities on the basis of symptoms, signs and diagnostic procedure. CO5: Analyzing, categorizing, comparing and differentiating various grade of binocular vision. CO6 : Evaluate , understand and applying the various grade of binocular vision.	
7	Course Description	This course deals with understanding of strabismus, its classification, necessary orthoptic investigations, diagnosis and non-surgical management. Along with theoretical knowledge it teaches the clinical aspects and application	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	History taking –Role play	CO1
	B	Identification and examination of accommodative convergent squint	CO1
	C	Identification and examination of non-accommodative convergent squint (in clinic or video)	CO1
	Unit 2		
	A	Cover Test	CO2
	B	Ocular motility demonstration and hands on various orthoptic instruments and procedures	CO2
	C	Case discussion different types of strabismus	CO2
	Unit 3		
	A	Identification and examination of divergent squint (in clinic or video)	CO3
	B	Identification and examination of vertical squint (in clinic or video)	CO3

	C	Identification of different types of paralytic squint			CO3
	Unit 4				
	A	Identifying comitant and restrictive squint			CO4,CO6
	B	Identifying null point in nystagmus			CO4,CO6
	C	Case study on amblyopia			CO4,CO6
	Unit 5				
	A	Diplopia charting (documentation)			CO5,CO6
	B	Hess charting (documentation)			CO5,CO6
	C	Visit to clinic and record cases			CO5,CO6
	Mode of examination	Practical			
	Weightage Distribution	CA	Viva-voce	ETE	
		25%	25%	50%	
	Text book/s*	Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers. Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd Gunter K. Von Noorden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company			
	Other References	Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular VisionHeterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincot Williams & Wilkins publisher			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	1	3	3	2	2
CO2	3	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	1	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	2	3	2	2	3	2	3	2
Avg PO attained	2.6	3	2.6	2.5	3	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP317	
2	Course Title	Geriatric Optometry	
3	Credits	2	
4	Contact Hours (L+T)	2	
	Course Type	Compulsory	
5	Course Objective	Be able to identify, investigate the age related changes in the eyes; Be able to counsel the elderly; Be able to dispense spectacles with proper instructions; Adequately gained knowledge on common ocular diseases.	
6	Course Outcomes	CO1: Defining, listing and learning the geriatric ocular disorders. CO2: Recognizing, Understanding, characterizing, explaining the kind of anomalies present in geriatric patient. CO3: Identifying, locating and demonstrating the principles for early detection, diagnosis and proper management. CO4: Performing, implementing and applying the of disorder in context of congenital or developmental. CO5: Analyzing, categorizing, comparing and differentiating various ocular diseases. CO6 : Evaluate , understand and applying the various types of ocular diseases.	
7	Course Description	This course deals with general and ocular physiological changes of ageing, common geriatric systemic and ocular diseases, clinical approach of geriatric patients, pharmacological aspects of ageing ,and spectacle dispensing aspects in ageing patients.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Structural changes of eye in elderly	CO1
	B	morphological changes of eye in elderly	CO1
	C	Physiological changes in eye in the course of aging.	CO1
	Unit 2		
	A	Introduction to geriatric medicine – epidemiology	CO2
	B	Need for optometry care	CO2
	C	Systemic diseases(Hypertension, Atherosclerosis, coronary heart disease, congestive Heart failure, Cerebrovascular disease, Diabetes, COPD)	CO2
	Unit 3		
	A	Optometric Examination of the Older Adult	CO3
	B	Ocular diseases common in old eye, with special reference to cataract, glaucoma, macular disorders,	CO3
	C	Vascular diseases of the eye	CO3
	Unit 4		
	A	Contact lenses in elderly	CO4,CO6
	B	Pharmacological aspects of aging	CO4,CO6

	C	Low vision causes, management and rehabilitation in geriatrics.			CO4,CO6			
	Unit 5							
	A	Spectacle dispensing in elderly			CO5,CO6			
	B	Considerations of spectacle lenses			CO5,CO6			
	C	Considerations of spectacle frames			CO5,CO6			
	Mode of examination	Theory						
	Weightage Distribution	CA	MTE	ETE				
		25%	25%	50%				
	Text book/s*	A.J. ROSSENBLOOM Jr& M.W.MORGAN: Vision and Aging, Butterworth-Heinemann, Missouri, 2007						
	Other References	OP Sharma: Geriatric Care – A textbook of geriatrics and Gerontology, viva books, New Delhi, 2005 VS Natarajan: An update on Geriatrics, SakthiPathipagam, Chennai, 1998 DE Rosenblatt, VS Natarajan: Primer on geriatric Care A clinical approach to the older patient, Printers Castle, Cochin, 2002						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	1	3	2	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	2	3	3	3	3	3	2	3
CO4	3	2	3	2	2	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	2	2	2	2	3
Avg PO attained	2.6	2.8	2.3	2.6	2.5	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP318/ BOP360	
2	Course Title	Paediatric Optometry/ Paediatric Optometry (LAB)	
3	Credits	3	
4	Contact Hours (L+P)	(2+2)	
	Course Type	Compulsory	
5	Course Objective	Have a knowledge of the principal theories of childhood development, and visual development; Have the ability to take a thorough paediatric history which encompasses the relevant developmental, visual, medical and educational issues	
6	Course Outcomes	CO1: Defining, listing and learning the pediatric ocular disorders. CO2: Recognizing, Understanding, characterizing, explaining the kind of anomalies present in geriatric patient. CO3: Identifying, locating and demonstrating the principles for early detection, diagnosis and proper management. CO4: Performing, implementing and applying the types of disorder in context of congenital or developmental. CO5: Analyzing, categorizing, comparing and differentiating various ocular diseases. CO6 : Evaluate , understand and applying the various types ocular diseases.	
7	Course Description	This course is designed to provide the students adequate knowledge in theoretical and practical aspects of diagnosis, and management of eye conditions related to paediatric population. Also it will inculcate the skill of transferring / communicating the medical information to the attender / patient by the students. The scope of this subject is to train the optometrists to develop a systematic way of dealing with children below 12, so as to implement primary eye care and have better, specialized management of anomalies.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	The Development of Eye and Vision	CO1
	B	History taking: Paediatric subjects	CO1
	C	Assessment of visual acuity	CO1
	Unit 2	Normal appearance, pathology and structural anomalies	
	A	Orbit, Eye lids, Lacrimal system; Conjunctiva, Cornea, Sclera	CO2
	B	Anterior chamber, Uveal tract, Pupil; Lens, vitreous, Fundus; Oculomotor system	CO2
	C	Refractive Examination	CO2
	Unit 3		
	A	Determining binocular status	CO3
	B	Determining sensory motor adaptability	CO3

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	C	Compensatory treatment and remedial therapy for : Myopia, Pseudomyopia, Hyperopia, Astigmatism, Anisometropia, Amblyopia			CO3
	Unit 4				
	A	Remedial and compensatory treatment of Strabismus and Nystagmus			CO4,CO6
	B	Anterior segment dysgenesis: Aniridia, Microphthalmos, Coloboma, Albinism			CO4,CO6
	C	Paediatric eye disorders: Cataract, Retinopathy of Prematurity, Retinoblastoma; Neuromuscular conditions (myotonic dystrophy, mitochondrial cytopathy), and Genetics			CO4,CO6
	Unit 5				
	A	Spectacle dispensing for children			CO5,CO6
	B	Paediatric contact lenses			CO5,CO6
	C	Low vision assessment in children			CO5,CO6
	Mode of examination	Theory/Practical			
	Weightage Distribution	CA	MTE	ETE	
		25%	25%	50% (Theory)	
		25%	25%(Viva- voce)	50% (Practical)	
	Text book/s*	Paediatric Optometry - JEROME ROSNER, Butterworth, London 1982			
	Other References	Paediatric Optometry – William Harvey/ Bernard Gilmartin, Butterworth –Heinemann, 2004			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	3	2	2
CO2	3	3	2	3	3	2	3	2
CO3	1	2	3	3	3	3	1	3
CO4	3	3	3	2	2	2	3	3
CO5	3	3	2	3	3	3	3	2
CO6	3	3	2	2	3	2	3	2
Avg PO attained	2.5	2.8	2.5	2.5	2.3	2.5	2.5	2.3

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP319	
2	Course Title	Dispensing Optometry	
3	Credits	3	
4	Contact Hours (L+T)	2+1	
	Course Type	Compulsory	
5	Course Objective	Frame & lens measurements and selection; Writing spectacle lens order; Facial measurements - Interpupillary distance measurement and measuring heights (single vision, multifocal, progressives); Lens verification and axis marking and fitting of all lens types; Final checking of finished spectacle with frame adjustments; Delivery and follow-up; Troubleshooting complaints and handling patient's questions	
6	Course Outcomes	CO1: Defining, listing and learning the Different types of ophthalmic lenses. CO2: Recognizing, Understanding, characterizing, explaining the uses of ophthalmic lenses in different cases. CO3: Identifying, locating and demonstrating the concept of optics different refractive errors which help in appropriate diagnosis. CO4: Performing, implementing and applying the type of lenses, prisms and their prescribing techniques. CO5: Analyzing, categorizing, comparing and differentiating various types of ophthalmic lenses. CO6 : Evaluate , understand and applying the various types of ophthalmic lenses.	
7	Course Description	This course deals with understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. In addition deals with role of optometrists in optical set-up.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Components of spectacle prescription & interpretation, transposition, Add and near power relation	CO1
	B	Frame selection –based on spectacle prescription, professional requirements, age group, face shape	CO1
	C	Measuring Inter-pupillary distance (IPD) for distance	CO1
	Unit 2		
	A	Measuring Inter-pupillary distance (IPD) for near; bifocal height	CO2
	B	Lens & Frame markings, Pupillary centers, bifocal heights, Progressive markings & adjustments –facial wrap, pantoscopic tilt	CO2
	C	Recording and ordering of lenses (power, add, diameter, base, material, type, lens enhancements)	CO2
	Unit 3		

	A	Neutralization –Hand & lensometer	CO3
	B	Axis marking, prism marking	CO3
	C	Faults in spectacles (lens fitting, frame fitting, patients complaints, description, detection and correction	CO3
	Unit 4		
	A	Final checking & dispensing of spectacles to customers	CO4,CO6
	B	Counseling on wearing & maintaining of spectacles, Accessories –Bands, chains, boxes, slevets, cleaners, screwdriver kit	CO4,CO6
	C	Spectacle repairs –tools, methods, soldering, riveting, frame adjustments	CO4,CO6
	Unit 5		
	A	Special types of spectacle frames: Monocles; Ptosis crutches; Industrial safety glasses; Welding glasses	CO5,CO6
	B	Frame availability in Indian market	CO5,CO6
	C	FAQ's by customers and their ideal answers	CO5,CO6
	Mode of examination	Theory	
	Weightage Distribution	CA 25%	MTE 25%
			ETE 50%
	Text book/s*	The fine art of prescribing glasses , Benjamin Milder, Butterworth Heinemann,	
	Other References	Spectacle frame dispensing: H Obstfeld: Butterworth Heinemann	

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	1	1	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	2	3	3	2	3	3	2	3
CO4	3	1	3	3	3	2	3	3
CO5	1	3	2	3	3	2	3	2
CO6	3	3	2	2	3	2	2	3
Avg PO attained	2.5	2.6	2.5	2.3	2.6	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP361	
2	Course Title	Dispensing Optometry (LAB)	
3	Credits	1	
4	Contact Hours (P)	2	
	Course Type	Compulsory	
5	Course Objective	Frame & lens measurements and selection; Writing spectacle lens order; Facial measurements - Interpupillary distance measurement and measuring heights (single vision, multifocal, progressives); Lens verification and axis marking and fitting of all lens types; Final checking of finished spectacle with frame adjustments; Delivery and follow-up; Troubleshooting complaints and handling patient's questions	
6	Course Outcomes	CO1: Defining, listing and learning the Different types of ophthalmic lenses. CO2: Recognizing, Understanding, characterizing, explaining the uses of ophthalmic lenses in different cases. CO3: Identifying, locating and demonstrating the concept of optics different refractive errors which help in appropriate diagnosis. CO4: Performing, implementing and applying the type of lenses, prisms and their prescribing techniques. CO5: Analyzing, categorizing, comparing and differentiating various types of ophthalmic lenses. CO6 : Evaluate , understand and applying the various types of ophthalmic lenses.	
7	Course Description	This course deals with understanding the theory behind spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. In addition deals with role of optometrists in optical set-up.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Interpretation of a spectacle prescription	CO1
	B	Transposition	CO1
	C	Measuring IPD for distance and near	CO1
	Unit 2		
	A	Marking pupillary centre	CO2
	B	Marking bifocal height	CO2
	C	Identifying temporary and permanent markings of PAL	CO2
	Unit 3		
	A	Documentation of hand neutralization (10 lenses of different types)	CO3
	B	Measuring power by lensometer (10 lenses)	CO3
	C	Identifying value and orientation of prism in a lens	CO3
	Unit 4		

	A	Identifying faults in spectacle frame			CO4,CO6			
	B	Identifying faults in spectacle lens			CO4,CO6			
	C	Frame adjustment (Plastic and metal)			CO4,CO6			
	Unit 5							
	A	Identifying monacles, ptosis crutches			CO5,CO6			
	B	Identifying safety glasses			CO5,CO6			
	C	Documentation of frames and lens available in Indian market			CO5,CO6			
	Mode of examination	Practical						
	Weightage Distribution	CA	CO1	ETE				
		25%	CO1	50%				
	Text book/s*	The fine art of prescribing glasses , Benjamin Milder, Butterworth Heinemann,						
	Other References	Spectacle frame dispensing: H Obstfeld: Butterworth Heinemann						

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3
CO2	3	3	2	3	3	2	3	3
CO3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	2	3	2
CO6	2	3	2	2	3	2	2	3
Avg PO attained	2.8	3	2.6	2.8	3	2.3	2.6	2.83

School: SSAHS		Batch : 2023-2027	
Programme: BOP		Current Academic Year: 2025-2026	
Branch: Optometry		Semester: 6th	
1	Course Code	BOP006	
2	Course Title	Clinics-IV	
3	Credits	2	
4	Contact Hours (P)	4	
	Course Type	Compulsory	
5	Course Objective	At the end of the course the students will be equipped with the basics knowledge about certain concepts that would lay the foundation for their courses in the next semester.	
6	Course Outcomes	CO1: Defining, listing and learning the facts about the diseases of human eye. CO2: Recognizing, Understanding, characterizing, explaining the various diseases of human eye. CO3: Identifying, locating and demonstrating the various diseases of the human eye with the help of instruments. CO4: Performing, implementing and applying the concept of prognosis and pathophysiology of different ocular diseases which help in appropriate diagnosis. CO5: Analyzing, categorizing, comparing and differentiating type of diseases and their diagnostic tests. CO6 : Evaluate , understand and applying the various types of ocular Instrument and their application	
7	Course Description	At the end of the course the students will be equipped with the basics knowledge about certain concepts, which would lay the foundation for their courses in the next semester.	
8	Outline syllabus		CO Mapping
	Unit 1	5 cases each of	
	A	Slitlampbiomicroscopy;	CO1
	B	Keratometry	CO1
	C	Ophthalmoscope	CO1
	Unit 2	5cases each of	
	A	Digital pressure;	CO2
	B	Schiotz Tonometry;	CO2
	C	Applanation Tonometry;	CO2
	Unit 3	5 cases each of	
	A	Non-contact tonometry;	CO3
	B	Gonioscopy;	CO3
	C	Corneal Sensitivity; Retinoscopy	CO3
	Unit 4	5 cases each of	
	A	HVID;	CO4,CO6
	B	Colour vision	CO4,CO6
	C	VVID;	CO4,CO6

	Unit 5	5 cases each of			
	A	Saccades ;			CO5,CO6
	B	Pursuits;			CO5,CO6
	C	Fundus examination by slit lamp biomicroscopy;			CO5,CO6
	Mode of examination	Practical			
	Weightage	CA	Viva-voce	ETE	
	Distribution	25%	25%	50%	
	Text book/s*	P R Yoder: Mounting Optics in Optical Instruments, SPIE Society of Photo-Optical Instrumentation, 2002 G Smith, D A. Atchison: The Eye and Visual Optical Instruments, Cambridge University Press, 1997			
	Other References	David Henson: Optometric Instrumentations, Butterworth- Heinemann, UK, 1991			

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	1	3	3	2	3	2	2
CO2	2	3	2	3	3	2	3	2
CO3	3	3	3	3	3	3	1	3
CO4	2	3	1	3	1	2	3	3
CO5	3	3	3	3	3	3	3	2
CO6	2	3	3	2	2	2	3	2
Avg PO attained	2.5	2.6	2.5	2.8	2.3	2.5	2.5	2.3

School: SSAHS	Batch : 2023-2027	
Programme: BOP		
Branch: Optometry	Semester: 6 th	
Course Code	RMS001	
Course Title	Research methodology and Statistics	
Credits	3	
Contact Hours	3-0-0	
Course Type	Compulsory	
Course Objective	1. To enable students, comprehend research issues 2. To enable students to identify research questions and formulate research hypothesis 3. To equip students with various techniques of research design and data collection 4. To enable students to synthesize qualitative and quantitative data crunching techniques	
Course Outcomes	CO1: Define the basic concepts and methods of research .CO2:To Explain the research issues CO3: Apply the application of descriptive statistics in data. CO4: Classify various techniques of research design and data collection CO5: Evaluate quantitative data techniques CO6: Discuss qualitative data techniques	
Course Description	To help the students to understand the basic principles of biostatistics & research methodology and applied to draw the inferences from the data.	
Outline syllabus		CO Mapping
Unit 1	Introduction to Research	CO1, CO2
A	<ul style="list-style-type: none">Meaning of research,Types of researchResearch Process	CO1, CO2
		CO1, CO2
		CO1, CO2
B	Literature Review	CO1,CO2
	<ul style="list-style-type: none">Literature review basicsPrimary dataSecondary data and exploration	CO1, CO2
		CO1, CO2
C	Theoretical Framework and Hypothesis Formulation	CO1,CO2
	<ul style="list-style-type: none">Types of variablesExogenous and Endogenous variablesFormulation of Hypothesis and Research question	CO1, CO2
		CO1, CO2
		CO1, CO2
Unit 2	Research Design	CO2,CO3
A	<ul style="list-style-type: none">Types of Research designInstrument design, Scale formation	CO2,CO3
		CO2,CO3

B	• Basics Biostatistics	CO1, CO3
C	• Methods of data collection	CO2,CO3
	• Questionnaires creation	CO2,CO3
	• Sampling Design	CO2,CO3
Unit 3	Data Analysis & Interpretation	
A	-Data Analysis -Normality Tests	
B	• Outlier tests.	CO1, CO3
C	• Hypothesis testing	CO3,CO4
Unit 4	Referencing	
A	• APA format	CO4,CO5
	• MLA format	CO2,CO3
B	• Harvard Style	CO4,CO5
	• IEEE format	CO2,CO3
C	• Report Writing	CO4,CO5
Unit5	• Ethical Practices in Research	CO2,CO3
A	• Plagiarism	CO5,CO6
B	• Introduction to plagiarism software	CO5,CO6
C	• Legal, Governmental and other norms	CO5,CO6
Mode of Examination	•	Theory
Weightage Distribution	CA 25%	MTE 25%
		ETE 50%
Text book/s*	1. Research Methodology- CR Kothari Statistics in Medicine-Colton-Little Brown. Boston	
Other References	1. Adler, Stier and Clark, How it's done: An Invitation to Social Research 3. Cooper, Schindler, Social Sciences Research Methods: How to start and finish your thesis, book, or article	

POs Cos	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	1	2	2	1	2
CO2	3	2	3		3		2	2
CO3		2	2	2	3	3	2	3
CO4	2				2	2	3	2
CO5	3	3	2	2	2	3		1
CO6	3	2	3	2	3	2	2	1
Avg PO attained	2.16	2	2.16	1.16	2.5	2	1.66	1.83

Programme: BOP		Batch: 2023-27	
Branch: Optometry		Semester: 7th	
1	Course Code	BOP401	
2	Course Title	BOP Internship and project work –I	
3	Credits	15	
4.	Course Type	Compulsory	
5	Course Objective	After completion of this course will led the students to Perform detailed history taking, carry out examination, diagnose, manage and refer the patients in different subspecialty clinics under supervision and also direct and exhibit research and clinical studies independently which will contribute to the advancement of optometry and improve the quality of life.	
6	Course Outcomes	<p>CO1: Defining, listing and learning the types of Ocular disease.</p> <p>CO2: Recognizing, Understanding, characterizing, explaining the uses types of Ocular instrument and ocular drugs.</p> <p>CO3: Identifying, locating and demonstrating the concept of types of Contact lens and visual aids.</p> <p>CO4: Performing, implementing and applying Ocular instrument</p> <p>CO5: Analyzing, categorizing, comparing and differentiating various types of Ocular disease.</p> <p>C06: To understand the basic concepts and methods of research and able to conduct the project Work</p>	
7	Course Description	After completion of this course will led the students to Perform detailed history taking, carry out examination, diagnose, manage and refer the patients in different subspecialty clinics under supervision and also direct and exhibit research and clinical studies independently which will contribute to the advancement of optometry and improve the quality of life.	
8	Outline Syllabus		CO Mapping
	Unit 1	Comprehensive OPD, Cornea OPD, and General workup- The students will be posted to these departments/section of the Ophthalmology unit of a hospital.	CO1,CO2 CO3
	Unit 2	Retina OPD, Uveitis workup and Diagnostic department -The students will be posted to the following departments/section of the Ophthalmology unit of a hospital in a span of 6 months.	CO2,CO4 CO5

	Unit 3	Pediatric department and Glaucoma department	CO2,CO4
	Unit 4	Subspecialty clinic - contact lens Low vision , Binocular vision	CO3,CO5
	Unit 5	Project Work -During internship and project work, students will have to maintain a file. In the file, collected data & diagnostic procedure of patients should be recorded.	CO1,CO5 CO6
Mode of examination		Practical /Viva	
Weight age Distribution		CA	MTE
		25%	75%

CO-PO Mapping

POs COs	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	2	3	3	3	3	3	1	1
CO2	3	2	2	3	3	2	2	1
CO3	3	3	3	2	3	3	2	2
CO4	2	2	2	3	3	3	2	2
CO5	3	3	2	3	2	3	2	2
CO6	2	3	2	2	3	3	3	2
Avg PO attained	2.5	2.66	2.3	2.6	2.83	2.83	2	1.66

The students will be posted to the following departments/section of the Ophthalmology unit of a hospital in a span of 12 months.

- Comprehensive OPD
- Retina OPD
- Glaucoma OPD
- Contact lens
- Low vision
- Binocular vision
- Ocular Prosthesis
- Eye bank

Guidelines for Project work

1. During internship and project work, students will have to maintain a file.
In the file, collected data & diagnostic procedure of patients should be recorded.

2. Project Work

On the given topic, student will collect the data of patients (as many as possible) and submit the project report before Viva .

The project work will be taken up by a student on an area identified is the process of internship.
The assessment of the course will be done based on the following criteria:

- i. Attendances
- ii. Case Study
- iii. Report
- iv. Presentation

The report should base the following points:

- i. Causes
- ii. Risk Factors
- iii. Prevalence
- iv. Post Treatment Effects on Patients
- v. Precautions Or Suggestions for Patients
- vi. Conclusive Remarks (by Presenter)

Note - During the internship period, student must attend all mentioned departments for the given time period.

Programme: BOP		Batch: 2023-2027	
Branch: Optometry		Semester: 8th	
1	Course Code	BOP402	
2	Course Title	BOP Internship and project work –II	
3	Credits	15	
4.	Course Type	Compulsory	
5	Course Objective	After completion of this course will led the students to Perform detailed history taking, carry out examination, diagnose, manage and refer the patients in different subspecialty clinics under supervision and also direct and exhibit research and clinical studies independently which will contribute to the advancement of optometry and improve the quality of life.	
6	Course Outcomes	CO1: Defining, listing and learning the types of Ocular disease. CO2: Recognizing, Understanding, characterizing, explaining the uses types of Ocular instrument and ocular drugs. CO3: Identifying, locating and demonstrating the concept of types of Contact lens and visual aids. CO4: Performing, implementing and applying Ocular instrument CO5: Analyzing, categorizing, comparing and differentiating various types of Ocular disease. CO6: To understand the basic concepts and methods of research and able to conduct the project Work	
7	Course Description	After completion of this course will led the students to Perform detailed history taking, carry out examination, diagnose, manage and refer the patients in different subspecialty clinics under supervision and also direct and exhibit research and clinical studies independently which will contribute to the advancement of optometry and improve the quality of life.	
8	Outline syllabus		CO Mapping
	Unit 1	Comprehensive OPD, Cornea OPD, and General workup- The students will be posted to these departments/section of the Ophthalmology unit of a hospital.	CO1,CO2 CO3
	Unit 2	Retina OPD, Uveitis workup and Diagnostic department -The students will be posted to the following departments/section of the Ophthalmology unit of a hospital in a span of 6 months.	CO2,CO4 CO5

	Unit 3	Pediatric department and Glaucoma department			CO2,CO4
	Unit 4	Subspecialty clinic - contact lens Low vision , Binocular vision			CO3,CO5
	Unit 5	Project Work -During internship and project work, students will have to maintain a file. In the file, collected data & diagnostic procedure of patients should be recorded.			CO1,CO5 CO6
Mode of examination		Practical /Viva			
Weight age Distribution		CA	MTE	ETE	
		25%		75%	

CO-PO Mapping

POs Cos	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3
CO1	3	2	3	1	1	3	3	2
CO2	2		3	2		1	3	1
CO3	1		1	1	2	3		
CO4	2	2	2		1	2	2	
CO5	3	3	2		1	1	2	1
C06	1		1	2	3		2	2
Avg PO attained	2.11	1.16	2	1	1.33	1.66	2	1

The students will be posted to the following departments/section of the Ophthalmology unit of a hospital in a span of 12 months.

- Comprehensive OPD
- Retina OPD
- Glaucoma OPD
- Contact lens
- Low vision
- Binocular vision
- Ocular Prosthesis
- Eye bank

Guidelines for Project work

1. During internship and project work, students will have to maintain a file.

In the file, collected data & diagnostic procedure of patients should be recorded.

2. Project Work

On the given topic, student will collect the data of patients (as many as possible) and submit the project report before Viva .

The project work will be taken up by a student on an area identified is the process of internship.

The assessment of the course will be done based on the following criteria:

- v. Attendances
- vi. Case Study
- vii. Report
- viii. Presentation

The report should base the following points:

- vii. Causes
- viii. Risk Factors
- ix. Prevalence
- x. Post Treatment Effects on Patients
- xi. Precautions Or Suggestions for Patients
- xii. Conclusive Remarks (by Presenter)

Note - During the internship period, student must attend all mentioned departments for the given time period.

Clinical Training and internship

Every student who has passed in all the theory and practical examinations of all the six semesters will have to undergo clinical training as internship as per schedule finalised by the School of optometry authorities. Every student should attend his/her training in the associated training centres as per the timings of those centres.

A monthly report and summary of the practical work done by student in that training centre will have to be countersigned by the responsible person from that centre. This report will be part of project to be submitted by every student as per the date schedule notified by school of optometry.

The Regular participation of students in seminars / case presentations is mandatory and aimed to encourage them in learning research and development Programmes in optometry.

Project Work report:

In the final fourth year of internship and clinical training each student will have to undertake a project work on a topic approved by school of optometry faculty. On completion of the project, the student should submit a report on project work, before the end of year of final qualifying examination.

Each report on the project and field work submitted by each candidate will be evaluated by authorities and declared to be 'Satisfactory' or 'Not Satisfactory'

Procedure for candidate to enter the fourth year of the course of studies:

No candidate shall be permitted to proceed to the fourth year of the course of study i.e. period of internship [clinical training] ,unless he has passed in all the written/practical/clinical examinations conducted during the preceding three years of the course of study and his project or field work report have been declared to be 'satisfactory'
