

GD GOENKA | SCHOOL OF HEALTHCARE

& ALLIED SCIENCES

Department of Optometry

B. Optometry | Bachelor of Optometry

2025-2029

Programme Handbook



School of Healthcare and Allied Sciences

Department of Optometry

Bachelor of Optometry (B. Optometry)

Under-Graduate Course 2025–29

PREFACE

GD Goenka University is an internationally acclaimed and premier institution of higher education in India. Quality education aimed at directing the students towards research, innovation and extension is the defining element of the GD Goenka University. The GD Goenka University, recognized by UGC, aspires to be a global leader in the 21st Century higher education ecosystem through enshrined core values of intellectual excellence, collegiality, diversity and integrity. GD Goenka University is also recognized as QS IGUAGE “Diamond” rated University.

GD Goenka University envisions all its programmes in the best interest of the students. It imbibes an outcome based curriculum for all its programmes to provide a focused, student- centric syllabus with an agenda to structure the teaching-learning experiences in a more outcome based manner.

The outcome based curriculum strengthens students ‘experiences and prepares the students for academia, employability and life-long learning.

Each programme reflects the promise to accomplish the learning outcomes by studying the courses. The graduate attributes encompass values related to the well-being, emotional stability, critical thinking, and social justice.

The redesigned curriculum focuses on the multi-disciplinary nature of the field of Optometry with emphasis on core optometry subjects with skills to represent the process of vision testing, spectacle and contact lens dispensing and low vision rehabilitation.

Another important part is the aspect of realizing the concept into graphical representation and a workable design. Students are exposed to research and hands on project-based education with active laboratory sessions. Visiting faculty and external examiners are professionals and academicians chosen from the field of optometry.

Students develop their projects with inputs from a highly driven team of faculty members and working professionals.

GD Goenka University hopes that the outcome based curriculum will help students in realizing their careers as informed, sensitive and responsible Optometrist.

Salient features of this model curriculum are:

1. Curriculum has been designed in such a way that it encourages innovation and research.
2. The curriculum has been designed where the students can understand the industry requirements and have hands-on experience.
3. The students will develop a problem-solving approach and will meet the challenges of future.
4. Emphasis on hands-on training has been promoted by including summer internships and general and Specialty clinical postings.
5. Bachelor of Optometry will ensure the completion of curriculum to help students to achieve better employability, start-ups, and other avenues for higher studies.

ACKNOWLEDGEMENT**Programme: Bachelor of Optometry****Year/Semester: 4 Years/ 8 Semesters****Session: 2025-2029**

The development of an outcome-based Model Curriculum for postgraduate degree course in the Department of Optometry is a result of thoughtful deliberations at various stages of dedicated and specialized experts. This model curriculum has been framed to meet the expectations of an academically challenging environment, develop problem-solving skills by students and align with current standards and to enrich the students to make them self-enablers and/or match job requirements on successful completion of their degrees.

We are greatly gratified Prof (Dr.) Saahil Arora for his supervision contribution, guidance, and support throughout the development of this curriculum. Special thanks and gratitude to Prof. (Dr.) Kim Menezes, Vice Chancellor, GD Goenka University and Registrar, GD Goenka University who have been instrumental and encouraging throughout the process of developing this curriculum. Last, but not the least, we also sincerely thank to the faculty coordinators who have contributed for development of this curriculum.

We acknowledge by signing below that we have received and have access to a copy of syllabus of the B.Optomety Programme indicated above. We have designed the B.Optomety Syllabus in Outcome Based Format and understand the programme specific outcomes of the B.Optomety Programme.

Furthermore, we acknowledge that the contents of the B.Optomety syllabus have been explained and/or read to us. We understand the requirements concerning textbook(s), assignments, practicum and evaluation and how the final grades will be determined with respect to achieving Course Outcomes.

Prepared by

Faculty Coordinator



Approved by Vice Chancellor

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1. Introduction

The GD Goenka Group has made a name for itself in the field of education. Over a period of time, the various educational entities of the group have converged into a fully functional corporate academy. Resources at GDGU have been continuously upgraded to optimize opportunities for the students. Our students are groomed in a truly inter-disciplinary environment where in they develop integrative skills through interaction with students from engineering, social sciences, management and other study streams.

The GD Goenka story goes back to the chain of schools that offered an alternative option of world-class education, pitching itself against the established elite schools, which had enjoyed a position of monopoly till then. Having blazed a new trail in school education the focus of the group was aimed at higher education. With the mushrooming of institutions of Higher Education in the National Capital Region, the university considered it very important that students take informed decisions and pursue career objectives in an institution, where the concept of education has evolved as a natural process.

GD Goenka University is established under the Haryana Private University Act 2006, received the approval of Haryana Legislature vide Amendment Act #36 of 2013 and consent of the Hon'ble Governor of Haryana on 11th April 2013, which was published in the Gazette notification vide Leg. No .10/2013, dated 3rd May, 2013.

GD Goenka University Is Unique Because of Its

Enduring legacy of providing education to high achievers who demonstrate leadership in diverse fields. Protective and nurturing environment for teaching, research, creativity, scholarship, social and economic justice.

2. Objectives

- a) To impart undergraduate, post graduate and doctoral education in identified areas of higher education.
- b) To undertake research programs with industrial interface.
- c) To integrate its growth with the global needs and expectations of the major stakeholders through teaching, research, exchange & collaborative programs with foreign, Indian Universities/Institutions and MNCs.
- d) To act as anodal center for transfer of technology to the industry.
- e) To provide job oriented professional education to the Indian student community with particular focus on Haryana.

3. About School

Established in the year 2016, the School of Healthcare and Allied Sciences at G D Goenka University is one of the best Optometry colleges in Delhi NCR. It offers an unmatched array of Academic and Research opportunities including cutting-edge innovation-based programs in biosciences. Our globally recognized graduate & post-graduate programs exhibit phenomenal healthcare education & professional training. As one of the top B Optometry colleges in Gurgaon, the school is home to more than 1,000 aspiring students nurturing their choicest professional goals in around 21 academic programs including Doctoral research. Presently, the School of Medical & Allied Sciences is committed to providing the foundation for careers in Physiotherapy, Optometry, Optometric, Clinical Research, and Healthcare, Yoga Sciences, Medical Lab Technology, Cardiovascular Technology, Public Health, Optometry, Radiology and Imaging Technology, Nutrition and Health and Nursing. We offer a dynamic research-intensive environment that fosters excellence in interdisciplinary research to discover solutions to state, national, and international challenges in healthcare.

School of Medical and Allied Sciences (SOHAS) includes:

I. Department of Optometry

- i. Bachelor of Optometry (B. Optometry): MoHFW & UGC approved four years degree Programme
- ii. Masters of Optometry (M. Optometry): MoHFW & UGC approved two years Bachelor's Programme

II. Department of Allied Sciences

- i. Bachelor of Physiotherapy (BPT)
- ii. Bachelor of Physiotherapy (MPT)
 - Musculoskeletal (previously known as Orthopedics)
 - Neurology
 - Cardiopulmonary
 - Sports
- iii. Bachelor of Optometry (B. Optom)
- iv. Masters of Optometry (M. Optom)
- v. B. Sc. (Bachelor of Science)
 - Nutrition & Health
 - Cardiovascular Technology
- vi. Bachelor In Medical Radiology and Imaging Technology (BMRIT)
- vii. Bachelor in Medical Laboratory Sciences (BMLT)
- viii. M.Sc. (Bachelor of Science)
 - Nutrition and Health
 - Healthcare and Clinical Research
- ix. Bachelors in Medical Laboratory Science
 - Clinical
 - Medical
 - Hematology
 - Pathology
- x. Public Health
- xi. Bachelor in Public Health (MPH)

- xii. Doctor of Philosophy (Ph.D.)
 - Full Time
 - Part Time

3.1 School Vision

To be an internationally recognized center for healthcare education and research, linking science and technology to enable skilled, competent and compassionate professionals to provide holistic healthcare services'

3.2 School Mission

To prepare globally competent health professionals through.

- Strong foundation in the fundamentals linking knowledge and skills through experiential learning
- inter disciplinary project-based learning with focus on innovation & research that improve employability.
- Flexible and distinctive pedagogy that leverage technology and instill notion of lifelong learning.
- Association with top ranked institutions and leading industries to facilitate exchange programmes, trainings and joint research
- Inculcation of ethical principles and understanding about societal & environmental responsibilities
- Curriculum which includes projects on good health and well-being of local communities to drive sustainable growth

3.3 Sustainable Development Goals

Through the curriculum, pedagogy and execution of various programmes, SOHAS is trying to achieve some of the important Sustainable Development Goals:

1. Good health and well-being: Healthcare and allied sciences encompass various disciplines that contribute to understanding, maintaining, and improving human health. Here are some ways in which they are connected: such as disease prevention and management, medical diagnostics, treatment and therapy, health technology, innovation & research, evidence-based practices, global health and humanitarian efforts. The advancements and knowledge generated in these disciplines contribute to disease prevention, diagnosis, treatment, and overall improvement of health outcomes, both at an individual and societal level.

2. Quality education: In healthcare and allied sciences, it is crucial for producing skilled healthcare professionals who can provide competent and compassionate care. Here are some key aspects that contribute to quality education in this field includes accredited institutions, experienced faculty, comprehensive curriculum, state-of-the-art facilities, ethical and patient-centered education and Research opportunities, practical problem-solving skills, collaboration with healthcare facilities, emphasis on communication skills. By incorporating these elements into the education of medical and allied sciences, institutions can produce well-rounded, competent, and compassionate healthcare professionals who positively impact the health and well-being of individuals and communities

3. Clean water and sanitation: It acts as major critical factors in promoting public health and preventing the spread of waterborne diseases. Healthcare and allied sciences play a significant role in understanding the importance of clean water and sanitation and developing strategies to ensure access to safe water and proper sanitation facilities. By addressing these issues, we can improve overall health outcomes and reduce the burden of waterborne diseases worldwide

4. Industry, innovation, and infrastructure: It is an essential component that contributes to the advancement of healthcare and allied sciences. They play a critical role in driving progress, improving healthcare delivery, and promoting medical research and development. Industry, innovation, and infrastructure are crucial pillars that drive advancements in medical and allied sciences. They enable the development of new medical technologies, treatments, and healthcare delivery models, ultimately leading to improved patient outcomes and better healthcare access for individuals and communities around the world.

5. Responsible consumption and production: Utilization of resources efficiently, minimizing waste, and ensuring ethical and sustainable practices throughout the healthcare industry is highly needed. There are few ways in which responsible consumption and production are related to healthcare and allied sciences like sustainable healthcare practices, ethical research and development, rational use of medications, proper disposal of medical waste, reduced use of single-use items, recycling & waste reduction and public awareness & education. By integrating responsible consumption and production practices into medical and allied sciences, the healthcare industry can minimize its environmental impact, reduce waste, and contribute to more sustainable and ethical healthcare practices. This not only benefits the environment but also supports the well-being of communities and future generations.

3.4 NEP Implementation:

The importance of short term professional and vocational courses with exit options has been emphasised in the New Education Policy 2020. The programs in Optometry have been prepared keeping in mind the flexibility for students in terms of multiple entry and exit options to streamline their talent and creativity.

4. Department of Optometry

Department of Optometry offers Undergraduate Bachelor of Optometry (B.Optomety): Four years Programme.

4.1 Graduate Attributes

- GA1: Creative, Sensitive and Adaptable Optometry Professional
- GA2: Equipped with Professional Ethics
- GA3: Good at communication: Interpersonal and graphical
- GA4: Rational decision maker
- GA5: Collaborative with multidisciplinary knowledge
- GA6: Good at Modern Technology Usage.

4.2 Programme Outcomes

Programme Outcomes (POs) of SOHAS of Bachelor of Optometry Programme: Students of **Undergraduate Bachelor of Optometry** degree Programme at the time of graduation will have-

- PO1.** Apply **foundational knowledge** of the core subjects of vision science, anatomy, physiology, biochemistry, and optics to accurately diagnose and treat various eye health conditions, ensuring optimal patient outcomes.
- PO2.** Able to **plan and coordinate resources**, time, and personnel efficiently to optimize patient care and clinic operations.
- PO3.** **Design and implement innovative solutions** for vision correction and rehabilitation, considering environmental impact, economic feasibility, and cultural relevance.
- PO4.** Apply scientific **research methodologies** to advance the field of optometry and improve patient outcomes.
- PO5.** Cultivate **leadership abilities** and collaborate effectively within multidisciplinary teams to provide comprehensive eye care services.
- PO6.** Uphold **ethical standards and values** while delivering patient-centered care in various settings, including hospitals, clinics, and community outreach programs.
- PO7.** **Communicate** proficiently with patients, healthcare professionals, and the community to educate, inform, and advocate for eye health and vision care.
- PO8.** Adhere to **professional code of conduct** and legal regulations to promote the integrity and reputation of the optometry profession.
- PO9.** Utilize **state-of-the-art technologies and diagnostic tools** to assess eye health, develop treatment plans, and monitor patient progress.
- PO10.** Implement **environmentally sustainable practices** in optometric practice, including waste management and the use of eco-friendly materials in eyewear and equipment.
- PO11.** Recognize the importance of **lifelong learning** and professional development to stay abreast of advancements in optometric research, technology, and patient care.

5. The Programme B.Optomety

The Bachelor of Optometry (B.Optomety) is an engaging and comprehensive programme that blends science and technology to provide students with a high level of contextual excellence in optometry. Through a mix of theoretical and practical subjects, students gain expertise in advanced clinical optometry, ocular diagnostics, therapeutic interventions, and vision rehabilitation. With a focus on evidence-based practice and hands-on training in leading eye care facilities, graduates are equipped to excel as compassionate optometrists, contributing to the advancement of the optometry profession and enhancing the vision health of individuals and communities.

5.1. Eligibility Criteria

Candidate shall have passed 10+2 examination conducted by the respective state / central government authorities recognized as equivalent to 10+2 examination by the Association of Indian Universities (AIU) with English as one of the subjects and Physics, Chemistry, Mathematics (P.C.M) and or Biology (P.C.B / P.C.M.B.) as optional subjects individually. Any other qualification approved by the GDGU as equivalent to any of the above examinations. In addition, candidates will have to successfully complete Goenka Aptitude Test for Admission (GATA) and appear for a personal interview.

5.2. Career Options

Graduates of the Bachelor of Optometry (B.Optomety) programme have various career prospects in both public and private sectors. Opportunities exist in hospitals, clinics, research centers, and eye care facilities, where optometrists can provide specialized services. Additionally, they can explore roles in academic institutions, contribute to research, and establish their own private optometric practices, making a positive impact on eye health and vision care.

5.3. Programme Duration

The course of study for Bachelor of Optometry shall extend over a period of eight semesters (four academic years). The curricula and syllabi for the programme shall be prescribed from time to time by GDGU.

5.4. Programme Specific Outcomes

After completion of the program students will be able to:

- PSO1.** Graduates will attain a thorough understanding of optometry-specific subjects, including ocular pharmacology, ocular anatomy and physiology, ocular pathology, visual optics, ocular diseases, binocular vision, low vision, contact lenses, and optometric dispensing enabling them to deliver high-quality eye care services as competent optometrists.
- PSO2.** Graduates will be equipped to pursue diverse career paths in optometry, including clinical practice, academic research, vision science, public health, vision rehabilitation, contact lens fitting, and ocular disease management, or establish their own optometric practices.

PSO3. Graduates will recognize the importance of continuing education and professional development in the field of optometry to stay abreast of advancements in technology, treatment modalities, and best practices, enhancing their ability to provide cutting-edge care to patients.

5.5. Class Timings

The classes will be held from Monday to Friday from 9.00 am to 4.00 pm.

5.6. Programme Scheme

For B.Optomtry Programme Scheme is attached in Annexure I.

5.7. Syllabus

The course of study for B.Optomtry shall include Semester Wise Theory & Practical, and offer a minimum of 202 credits, distributed across semesters as described below:

5.7.1. Table 1: Semester wise credits distribution

Semester	Total Credit Point
I	25
II	23
III	25
IV	25
V	26
VI	22
VII	28
VIII	28
Total	202

5.7.2. Table 2: Programme structure of Bachelor of Optometry

S. No.	Course Code	Course Title	LTP/week	Total Credits	Type
Semester-I					
1	BOP1001	General Anatomy	3+0+2	4	Core
2	BOP1002	General Physiology	3+0+2	4	Core
3	BOP1003	Geometrical Optics-I	3+0+2	4	Core
4	BOP1009	Introduction to Clinical Optometry	1+0+2	2	Core
5	BOP1010	Physical Optics	2+0+2	3	Core
6	BOP1701	Nutrition	2+0+0	2	SEC
7	CAP1401*	Computer Application in Healthcare Research	1+0+2	2	AEC
8	COM1007*	Introduction to Communication Skills	1+0+2	2	AEC
9	BOP1503	Science of Well being (Certificate course)	0+0+4	2	GE-II
Total			34 h	25	
Semester-II					
1	BOP1004	Ocular Anatomy	2+0+2	3	Core
2	BOP1005	Ocular Physiology	2+0+2	3	Core
3	BOP1011	Basics & Ocular Biochemistry	2+0+2	3	Core
4	BOP1008	Geometrical Optics-II	2+0+2	3	Core
5	ENV1701	Environmental Studies	3+0+0	3	AEC
6	BOP1704	Medical Law and Ethics	2+0+0	2	SEC
7	BOP1705	Introduction to Quality & Patient Safety	2+0+0	2	AEC
8	BOP1502	Clinical Optometry-I	0+0+4	2	Core
9	BOP1504	Computational Tools in Healthcare Delivery	0+0+4	2	DSE

	BOP1505	Introduction to national health care delivery system in India			
Total			31 h	23	
Semester-III					
1	BOP2101	Ocular Microbiology	2+0+2	3	Core
2	BOP2105	Optometric Instrument	2+0+2	3	Core
3	BOP2110	Optometric Optics-I	2+0+2	3	Core
4	BOP2111	Clinical Examination of Visual System	1+0+2	2	Core
5	BOP2701	Visual Optics-I	2+0+0	2	Core
6	BOP2704	Ocular Disease-I	3+0+0	3	Core
7	BOP2503*	Clinical Optometry-II and Summer Training Evaluation I	0+0+8	4	Internship
8	BOP2504	Indian Medicine and Telemedicine (Certificate Course)	0+0+4	2	GE-II
9	IPT2001	Interdisciplinary Project	2+0+2	3	GE-I
Total			36 h	25	
Semester-IV					
1	BOP2106	Basic and Ocular Pharmacology	3+0+2	4	Core
2	BOP2107	Optometric Optics-II and Dispensing Optics	2+0+2	3	Core
3	BOP2109	Visual Optics-II	2+0+2	3	Core
4	BOP2715	Medical Psychology	2+0+0	2	AEC
5	BOP2716	Pathology	2+0+0	2	Core
6	BOP2717	Ocular Disease –II	3+0+0	3	Core
7	BOP2505	Clinical Optometry-III and Community care	0+0+6	3	Community
8	BOP2507	Dry Eye Workshop	0+0+4	2	DSE
	BOP2508	AI and Machine Learning in Optometry			
9	IPT2002	Interdisciplinary Project	2+0+2	3	GE-I
Total			34 h	25	
Semester-V					
1	BOP3102	Contact Lens-I	3+0+2	4	Core
2	BOP3103	Low Vision Care	2+0+2	3	Core
3	BOP3104	Binocular Vision-I	3+0+2	4	Core
4	BOP3709	Geriatric Optometry and Pediatric Optometry	2+0+0	3	Core
5	BOP3710	Systemic Diseases and Ocular Associations	3+0+0	3	Core
6	RMB3901	Basics of Research Methodology	4+0+0	4	Research
7	BOP3503*	Clinical Optometry-IV and Summer Training Evaluation II	0+0+8	4	Internship
8	BOP3504	Professionalism in Allied Health (Certificate course)	0+0+4	2	GE-II
Total			33 h	26	
Semester-VI					

1	BOP3105	Contact Lens-II	3+0+2	4	Core
2	BOP3106	Binocular Vision-II	3+0+2	4	Core
3	BOP3712	Public Health & Community Optometry	2+0+0	2	Community
4	BOP3713	Occupational Optometry	2+0+0	2	Core
5	BOP3705	Practice Management	2+0+0	2	SEC
6	BOP 3505	Clinical Optometry-V and Community care	0+0+8	4	Community
7	BOP3506	Research Project-I	0+0+4	2	Research
8	BOP3507	Myopia Control Workshop	0+0+4	2	DSE
	BOP3509	Neuro-Optometry & Brain Injury Rehabilitation Workshop			
Total			32 h	22	
Semester-VII					
1	BOP4503	Internship- I*	0+0+32	16	Internship
2	BOP4504	Research Project- II	0+0+24	12	Research
Total			48 h	28	
Semester-VIII					
1	BOP4505	Internship- II*	0+0+32	16	Internship
2	BOP4506	Research Project- III	0+0+24	12	Research
Total			48 h	28	

Semester I

BOP1001: GENERAL ANATOMY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code BOP1001	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) BOP1001 General Anatomy			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Anatomy of the Orbit Unit II: Anatomy of the Eyeball Unit III: Anatomy of the Eyelids Unit IV: Anatomy of the Sclera Unit V: Anatomy of the Optic Nerve & Retina Unit VI: Embryology			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 45	Tutorials: 0	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1001.1	Students will be able to understand about the proper terminology of the respective body structure and human anatomy.		
COBOP1001.2	Understand the various organ structures with a backdrop of general anatomy		
COBOP1001.3	Compare the differences between the similar structures in the body and their relevance		
COBOP1001.4	Identify and learn to apply the knowledge of various structures to clinical aspect of diseases		
COBOP1001.5	Augment their learning by making models, charts and learning on simulators		
13. UNIT WISE DETAILS		No. of Units: 6	
Unit Number: 1 No. of Lectures: 7 Title: Introduction to Human Anatomy.			
Content Summary: Anatomy: Definition and its relevance in medicine and optometry Planes of the body, relationship of structures, organ system Skeleton System Tissues of the Body: Epithelium, connective tissue, bone and cartilage, Embryology, histology, different types of each of them, types of cells, cellular differentiation and arrangements in different tissues			
Unit Number: 2 No. of Lectures: 7 Title: Muscles, Blood vessels & Skin and appendages.			
Content Summary:			

Muscles: Different types of muscles, their functional differentiation, their relationship with different structures, their neural supply. Blood vessels: Differentiation between arteries and veins, embryology, histology of both arteries and veins, Functional differences between the two, anatomical differences at different locations. Skin and appendages: Embryology, anatomical differences in different areas, functional and protective variations, innervations, relationship with muscles and nerves	
Unit Number: 3 No. of Lectures: 7 Title: Lymphatic system & Glands.	
Content Summary: Lymphatic system: Embryology, functions, relationship with blood vessels and organs Glands: Embryology, different types of glands (exocrine and endocrine), functional differences, neural control of glands.	
Unit Number: 4 No. of Lectures: 12 Title: Nervous System	
Content Summary: Nervous system: Parts of Nervous system, cell types of nervous system, Blood-brain barrier, Reflex arc, Peripheral Nerves, Spinal nerves, Nerve fibers, Autonomic Nervous system. Brain and Cranial nerves: Major parts of Brain, Protective coverings of the Brain, Cerebrospinal Fluid, Brain stem, Cerebellum, Diencephalon, Cerebrum, Cranial nerves.	
Content Summary: Embryology of the eye.	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate 3. High ✓
b) SDG.....10.....	1. Weak 2. Moderate ✓ 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • Mariano S.H. DiFiore: Atlas of Human Histology, 5th Ed. 1981, Lea and Feliger. • G.J. Tortora & N.P. Anagnostakos: Principles of Anatomy and Physiology (Recent edition) • B.D. Chaurasia: Handbook of General Anatomy, 2nd Ed., CBS Publishers and Distributors, New Delhi - 110032. • Peter L. Williams and Roger Warwick: - Gray's Anatomy - Descriptive and Applied, 36th Ed., 1980, Churchill Livingstone. • T.S. RANGANATHAN: Text book of Human Anatomy, 1982, S. Chand & Co., New Delhi 110 055. 3. Inderbir Singh: Human Embryology, 3rd Ed., Macmillan India, 1981. • R. Kanagasuntharam, P. Sivananda-Singham & A. Krishnamurti: Anatomy-Regional, Functional, & Clinical, P.G. Publisher, Singapore 1987. E-Book: Reference websites:	

19. E-Learning Resources**NPTEL:****Animated Lab Videos:**MOOC Supplemented: Coursera Course on “**Anatomy Specialization**”**Participative Learning Component**

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP1001.1
2.	Unit II	Assignment, MSE, ETE	COBOP1001.2
3.	Unit III	Assignment, MSE, ETE	COBOP1001.3
4.	Unit IV	Assignment, MSE, ETE	COBOP1001.4, COBOP1001.5

Value Added Experiments: NA**Activities for Differential learning Needs**

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Create models of parts of eye in group

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1001.1	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1001.2	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1001.3	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1001.4	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1001.5	3	3	2	2	3	1	2	2	2	1	3	2	1	1
Average	3	0.6	2	2	3	1	0.4	2	2	1	3	2	1	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP1002: GENERAL PHYSIOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code BOP1002	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Cell Structure & Organization Tissue Unit II: Digestion Unit III: Endocrines Unit IV: Circulation System Unit V: Nervous System			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 45		Tutorials: 0	Practical's: 15
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1002.1	Understand about the proper terminology of the respective body structure and human PHYSIOLOGY.		
COBOP1002.2	Understand the various organ functions with a backdrop of general physiology		
COBOP1002.3	Analyse the differences between similar functions in the body and their relevance		
COBOP1002.4	Learn to apply the knowledge of various physiological process to clinical aspect of diseases		
COBOP1002.5	Simplify their learning by making models, charts and learning on simulators		
13. UNIT WISE DETAILS		No. of Units: 6	
Unit Number: 1 No. of Lectures: 8 Title: Cell Structure & Organization Tissue.			
Content Summary: CELL STRUCTURE & ORGANIZATION Tissue: organization Epithelium Connective tissue –Collagen fibers –Elastic fibers –Areolar fibers Cartilage –Bone Contractile tissue –striated –skeletal –cardiac –non striated –plain –myoepithelial General principles of cell physiology of skeletal muscle BLOOD: Composition Volume measurement & variations Plasma proteins –classification & functions red blood cells –development, morphology & measurements –functions & dysfunctions. White blood cells –development –classification, morphology –functions & dysfunctions Platelets –morphology –development, functions & dysfunctions Clotting –factors–mechanism –anti- coagulants dysfunctions Blood grouping –classification –importance in transfusion, Rh factor & incompatibility Suspension stability Osmotic stability Reticule endothelial system Spleen lymphatic tissue. Thymus bone marrow immune system of cellular Humoral Autoimmune			

Unit Number: 2 No. of Lectures: 7 Title: Digestion.	
Content Summary: DIGESTION: General arrangement, salivary digestion –functions & regulations Gastric digestion –functions & regulations, Pancreatic digestion –functions & regulations Intestinal digestion –functions & regulations Liver & bile Absorption Motility Deglutition Vomiting Defecation Functions of large intestine Neurohumoral regulations of alimentary functions, summary EXCRETION: Body fluids –distribution, measurement & exchange, Kidney –structure of nephron –mechanism of urine formation – composition of the urine and abnormal constituents –urinary bladder & micturition	
Unit Number: 3 No. of Lectures: 7 Title: Endocrines.	
Content Summary: ENDOCRINES: Hormone mechanism –negative feed backs –tropic action –permissive action – cellular action, hypothalamic regulation Thyroid-hormones, actions, regulations Adrenal cortex - hormones, actions, regulations Adrenal medulla –hormones, actions, regulations Parathyroid - hormones, actions, regulations Islets of pancreas –hormones, actions, regulations Miscellaneous _ hormones, actions, regulations Common clinical disorders REPRODUCTION: Male reproductive system –control & regulation, Female reproductive system –uterus –ovaries –menstrual cycle – regulation – pregnancy & delivery –breast –family planning. RESPIRATION: Mechanics of respiration –pulmonary function tests –transport of respiratory gases- neural and chemical regulation of respiration –hypoxia, cyanosis, dyspnoea– asphyxia.	
Unit Number: 4 No. of Lectures: 7 Title: Circulation	
Content Summary: CIRCULATION: General principles Heart: myocardium –innervation –transmission of cardiac impulse- Events during cardiac cycle –cardiac output. Peripheral circulation: peripheral resistances –arterial blood pressure –measurements –factors regulation variations –capillary circulation – venous circulation. Special circulation: coronary cerebral –miscellaneous ENVIRONMENTAL PHYSIOLOGY: Body temperature regulation (including skin Physiology). Exposure to low and high atmospheric pressure	
Unit Number: 5 No. of Lectures: 7 Title: Nervous System	
Content Summary: NERVOUS SYSTEM: Neuron –Conduction of impulse –synapse –receptor. Sensory organization –pathways and perception Reflexes – cerebral cortex –functions. Thalamus –Basal ganglia Cerebellum. Hypothalamus. Autonomic nervous system –motor control of movements, posture and equilibrium – conditioned reflex, eye hand co-ordination SPECIAL SENSES– (Elementary) Olfaction –Taste –Hearing	
Content Summary: Embryology of the eye.	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not)	
Yes No ✓	
Describe (if yes):	
NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)

a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High		
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High		
13. Title of Lab Manual (if applicable): NA			
14. Books Recommended: • L Prakasam reddy, Fundamentals of Medical Physiology, 4th Edition, Paras medical Publisher, Hyderabad, 2008 • Sujit K. Chaudhuri, Concise Medical Physiology, 6th edition, New Central Book Agency, Kolkata, 2008 • AK Khurana, Indu Khurana: Anatomy and Physiology of Eye, Second edition, CBS Publishers, New Delhi, 2006 • A C Guyton: Text book of Medical Physiology, 8th edition, Saunders company, Japan • G J Tortora, B Derrickson: Principles of anatomy & physiology, 11th edition, Harper & Row Publishers, New York • John Wiley & Sons Inc, New Jersey, 2007 E-Book: Reference websites:			
14. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented: Coursera course on “Introductory Human Physiology”			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP1002.1
2.	Unit II	Assignment, MSE, ETE	COBOP1002.1
3.	Unit III	Assignment, MSE, ETE	COBOP1002.2
4.	Unit IV	Assignment, MSE, ETE	COBOP1002.3
5.	Unit V	Assignment, MSE, ETE	COBOP1002.4
6.	Unit VI	Assignment, MSE, ETE	COBOP1002.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1002.1	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1002.2	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1002.3	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1002.4	3		2	2	3	1		2	2	1	3	2	1	1
COBOP1002.5	3	3	2	2	3	1	2	2	2	1	3	2	1	1
Average	3	0.6	2	2	3	1	0.4	2	2	1	3	2	1	1

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP1003: GEOMETRICAL OPTICS-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code BOP1003	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Nature of light Unit II: Lenses Unit III: Prisms Unit IV: Image formation by lenses Unit V: Imaging by Lenses			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 45	Tutorials: 0	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1003.1	Recall the basics of geometric or ray optics.		
COBOP1003.2	Identify the nature of light and its production.		
COBOP1003.3	Examine the basic principles and laws in optics.		
COBOP1003.4	Understand about spherical lenses.		
COBOP1003.5	Analyze the use of mirrors, lens and prism for the formation of images.		
13. UNIT WISE DETAILS		No. of Units: 6	
Unit Number: 1 No. of Lectures: 8 Title: Nature of light.			
Content Summary: Nature of light –light as electromagnetic oscillation; ideas of sinusoidal oscillations; amplitude and phase; speed of light in vacuum and other			

media; refractive index. Wavefronts–spherical, elliptical and plane; Curvature and vergence; rays; convergence and divergence in terms of rays and vergence; vergence at a distance Refractive index; its dependence on wavelength Fermat's and Huygens's Principle –Derivation of laws of reflection and refraction (Snell's law) from these principles Plane mirrors –height of the mirror; rotation of the mirror Reflection by a spherical mirror –paraxial approximation; sign convention; derivation of vergence equation	
Unit Number: 2 No. of Lectures: 7 Title: Lenses.	
Content Summary: Imaging by concave mirror, convex mirror Reflectivity; transmissivity; Snell's Law, Refraction at a plane surface Glass slab; displacement without deviation; displacement without dispersion Thick prisms; angle of prism; deviation produced by a prism; refractive index of the prism Prisms; angular dispersion; dispersive power; Abbe's number. Definition of crown and flint glasses; materials of high refractive index	
Unit Number: 3 No. of Lectures: 7 Title: Prisms.	
Content Summary: Thin prism –definition; definition of Prism dioptre; deviation produced by a thin prism; its dependence on refractive index 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 and negative powered surface 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.	
Unit Number: 4 No. of Lectures: 7 Title: Image formation by lenses.	
Content Summary: Image formation by a lens by application of vergence at a distance formula; definitions of front and back vertex powers; equivalent power; first and second principal planes/points; primary and secondary focal planes/points; primary and secondary focal lengths Newton's formula; linear magnification; angular magnification Nodal Planes, Thin lens as a special case of thick lens; review of sign convention	
Unit Number: 5 No. of Lectures: 7 Title: Imaging by Lenses.	
Content Summary: Imaging by a thin convex lens; image properties (real/virtual; erect/inverted; magnified/minified) for various object positions Imaging by a thin concave lens; image properties (real/virtual; erect/inverted; magnified/minified) for various object positions, Prentice's Rule 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	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)

a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High

17. Title of Lab Manual (if applicable): NA

18. Books Recommended:

- Tunnacliffe A. H, Hirst J. G, Optics, The association of British Dispensing Opticians, London, U.K., 1990.
- Pedrotti L. S, Pedrotti Sr. F. L, Optics and Vision, Prentice Hall, New Jersey, USA, 1998.
- Loshin D. S. The Geometric Optics Workbook, Butterworth-Heinemann, Boston, USA, 1991.
- Schwartz S. H. Geometrical and Visual Optics: A Clinical Introduction, McGraw-Hill, New York, USA, 2002

19. E-Learning Resources

NPTEL:

Animated Lab Videos:

MOOC Supplemented: Coursera course on “Physics of Geometrical and Physical Optics”

Participative Learning Component

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP1003.1
2.	Unit II	Assignment, MSE, ETE	COBOP1003.4
3.	Unit III	Assignment, MSE, ETE	COBOP1003.5
4.	Unit IV	Assignment, MSE, ETE	COBOP1003.2
5.	Unit V	Assignment, MSE, ETE	COBOP1003.2

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in

		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	External Component
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1003.1	2		2	2			1		1	2	3	2	1	1
COBOP1003.2	2		2	2			1		1	2	3	2	1	1
COBOP1003.3	2		2	2			1		1	2	3	2	1	1
COBOP1003.4	2		2	2			1		1	2	3	2	1	1
COBOP1003.5	2		2	2			1		1	2	3	2	1	1
Average	2		2	2			1		1	2	3	2	1	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP1009: INTRODUCTION TO CLINICAL OPTOMETRY

1. School or Department Name:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: I		3. Course Code BOP1009	4. L-T-P 1-0-2	5. Credits 2
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus: No. of Units: 4				
UNIT-I 6h INTRODUCTION: Introduction to optometry, Introduction to eye - anterior segment, posterior segment and ocular adnexa.				
UNIT-II 6h Trial box contents, various types of lenses and its purpose, Image shift with different type of lenses, Hand Neutralisation of Trial Lenses, Occluder, Pin hole and its use.				
UNIT-III 6h History taking, Vision, Measuring Visual Acuity and Documentation, Basic eye examination protocol.				
UNIT-IV 6h Basics of refractive error, social responsibility, Basics of ethics and professionalism				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 15		Tutorials: 0		Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP1009.1	Relate the history and concept of optometry and the relevance of public health in optometry.			
COBOP1009.2	Distinguish the components of gross ocular anatomy, and be able to compare a normal versus abnormal human eye.			
COBOP1009.3	Analyze types of refractive errors and measure visual acuity			
COBOP1009.4	Identify suitable spectacle prescription and spectacle lens designs			
COBOP1009.5	Execute a thorough case history and utilize professional communication.			
13. UNIT WISE DETAILS No. of Units: 6				
UNIT-I 15h				

Introduction to optometry, Introduction to eye - anterior segment, posterior segment and ocular adnexa.																			
UNIT-II		15h																	
Trial box contents, various types of lenses and its purpose, Image shift with different type of lenses, Hand Neutralisation of Trial Lenses, Occluder, Pin hole and its use.																			
UNIT-III		15h																	
History taking, Vision, Measuring Visual Acuity and Documentation, Basic eye examination protocol.																			
UNIT-IV		15h																	
Basics of refractive error, social responsibility, Basics of ethics and professionalism,																			
14. Instructions for students - Before coming to the class please read about the topic - After every class, students go through the reading/reference material shared with them - After completing every topic, a quiz will be taken in class - Students must come to class on time - All students have to make class notes and participate in class discussion - All student must secure at least 50% marks in each evaluation component - All students must maintain the attendance at least 80% - All student must submit a project either in group or single																			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not)																			
Yes No ✓																			
Describe (if yes):																			
NA																			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)																	
a) SDG.....4.....		1. Weak 2. Moderate ✓ 3. High																	
b) SDG.....10.....		1. Weak ✓ 2. Moderate 3. High																	
17. Title of Lab Manual (if applicable): NA																			
18. Books Recommended: - Stephen J. Miller: Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990 - Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth - Heinemann, 2007.																			
19. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented																			
Participative Learning Component <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 40%;">Topic</th> <th style="width: 30%;">Submissions/Assessment</th> <th style="width: 20%;">COs covered</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Unit I</td> <td>Assignment, MSE, ETE</td> <td>COBOP1009.1, COBOP1009.2</td> </tr> <tr> <td>2.</td> <td>Unit II</td> <td>Assignment, MSE, ETE</td> <td>COBOP1009.3</td> </tr> <tr> <td>3.</td> <td>Unit III</td> <td>Assignment, MSE, ETE</td> <td>COBOP1009.4</td> </tr> </tbody> </table>				Sr. No.	Topic	Submissions/Assessment	COs covered	1.	Unit I	Assignment, MSE, ETE	COBOP1009.1, COBOP1009.2	2.	Unit II	Assignment, MSE, ETE	COBOP1009.3	3.	Unit III	Assignment, MSE, ETE	COBOP1009.4
Sr. No.	Topic	Submissions/Assessment	COs covered																
1.	Unit I	Assignment, MSE, ETE	COBOP1009.1, COBOP1009.2																
2.	Unit II	Assignment, MSE, ETE	COBOP1009.3																
3.	Unit III	Assignment, MSE, ETE	COBOP1009.4																

4.	Unit IV	Assignment, MSE,ETE	COBOP1009.5
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Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (1-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION: (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
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COBOP1009.1	3	3	3	3	2	3	3	3	3	3	3	3	3	3
COBOP1009.2	3	3	3	3	2	3	3	3	3	3	3	3	3	3
COBOP1009.3	3	3	3	3	2	3	3	3	3	3	3	3	3	3
COBOP1009.4	3	3	3	3	2	3	3	3	3	3	3	3	3	3
COBOP1009.5	3	3	3	3	2	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	2	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP1010: PHYSICAL OPTICS

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code BOP 1010	4. L-T-P 2-0-2	5. Credits 3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Nature of light- light as electromagnetic oscillation –wave equation; ideas of sinusoidal oscillations –simple harmonic oscillation; transverse nature of oscillation; concepts of frequency, wavelength, amplitude and phase. Sources of light; Electromagnetic Spectrum. Polarized light; linearly polarized light; and circularly polarized light. Unit-II Intensity of polarized light Malus' Law; polarizers and analysers; Methods of producing polarized light; Brewster's angle. Birefringence; ordinary and extraordinary rays. Relationship between amplitude and intensity. Unit-III Coherence- Interference; constructive interference, destructive interference; fringes; fringe width. Double slits, multiple slits, gratings. Diffraction; diffraction by a circular aperture; Airy's disc Unit-IV Resolution of an Instrument, Telescope, for example), Rayleigh's criterion, Scattering; Rayleigh's scattering; Tyndall effect, Fluorescence and Phosphorescence. Unit-V Basics of Lasers, Coherence; population inversion; spontaneous emission; Einstein's theory of lasers. Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and efficacy curves; photometric units Inverse square law of photometry; Lambert's law. Other units of light measurement; retinal illumination; Trolands. Practical: - Gratings – determination of grating constant using Sodium vapour lamp; determination of wavelengths of light from Mercury vapour lamp - Circular Apertures – measurements of Airy's disc for apertures of various sizes - Verification of Malus' Law using a polarizer – analyser combination - Demonstration of birefringence using Calcite crystals - Measurement of the resolving power of telescopes.				

• Newton's rings • Demonstration of fluorescence and phosphorescence using crystals and paints		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 36	Tutorials: Nil	Practical's: 24
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP1010.1	Infer a thorough knowledge of properties of light.	
COBOP1010.2	Distinguish various phenomenon of light and optical media	
COBOP1010.3	Develop a good understanding about photometry and factors associated with it	
COBOP1010.4	Build basic idea about lasers and other artificial sources of light	
COBOP1010.5	Differentiate various phenomena of light like diffraction and polarization.	
13. UNIT WISE DETAILS		No. of Units: 05
Unit Number: 1	No. of Lectures: 4	Title: Light
Content Summary: Nature of light- light as electromagnetic oscillation –wave equation; ideas of sinusoidal oscillations –simple harmonic oscillation; transverse nature of oscillation; concepts of frequency, wavelength, amplitude and phase. Sources of light; Electromagnetic Spectrum. Polarized light; linearly polarized light; and circularly polarized light		
Unit Number: 2	No. of Lectures: 5	Title: Polarised light
Content Summary: Intensity of polarized light Malus' Law; polarizers and analysers; Methods of producing polarized light; Brewster's angle. Birefringence; ordinary and extraordinary rays. Relationship between amplitude and intensity.		
Unit Number: 3	No. of Lectures: 5	Title: Interference
Content Summary: Coherence- Interference; constructive interference, destructive interference; fringes; fringe width. Double slits, multiple slits, gratings. Diffraction; diffraction by a circular aperture; Airy's disc		
Unit Number: 4	No. of Lectures: 5	Title: Telescope
Content Summary: Resolution of an Instrument, Telescope, for example), Raleigh's criterion, Scattering; Raleigh's scattering; Tyndall effect, Fluorescence and Phosphorescence		
Unit Number: 5	No. of Lectures: 4	Title: LASERs
Content Summary: Basics of Lasers, Coherence; population inversion; spontaneous emission; Einstein's theory of lasers. Radiometry; solid angle; radiometric units; photopic and scotopic luminous efficiency and efficacy curves; photometric units Inverse square law of photometry; Lambert's law. Other units of light measurement; retinal illumination; Trolands.		
Practical • Gratings – determination of grating constant using Sodium vapour lamp; determination of wavelengths of light from Mercury vapour lamp • Circular Apertures – measurements of Airy's disc for apertures of various sizes • Verification of Malus' Law using a polarizer – analyser combination • Demonstration of birefringence using Calcite crystals • Measurement of the resolving power of telescopes. • Newton's rings • Demonstration of fluorescence and phosphorescence using crystals and paints		
14. Instructions for students • Before coming in the class please read about general physiology.		

- All students should be able to identify different anatomical parts of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.																											
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA																											
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)																									
a) SDG: 3		1. Weak 2. Moderate ✓ 3. High																									
b) SDG: NA		1. Weak 2. Moderate 3. High																									
17. Title of Lab Manual (if applicable): Not applicable																											
18. Books Recommended: Reference Books: - AK Khurana, Indu Khurana: Anatomy and Physiology of Eye, Second edition, CBS Publishers, New Delhi, 2006 - RD Ravindran: Physiology of the eye, Arvind eye hospitals, Pondicherry, 2001 2. PL Kaufman, A Alm: Adler's Physiology of the eye clinical application, 10th edition, Mosby, 2002 E-Book: NA Reference websites: NA																											
18. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA																											
Experiential Learning Component																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 20%;">Topic</th> <th style="width: 40%;">Submissions/Assessment</th> <th style="width: 30%;">COs covered</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Light</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1010.1</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Polarised light</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1010.5</td> </tr> <tr> <td style="text-align: center;">3.</td> <td>Interference</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1010.2</td> </tr> <tr> <td style="text-align: center;">4.</td> <td>Telescope</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1010.3</td> </tr> <tr> <td style="text-align: center;">5.</td> <td>LASERs</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1010.4</td> </tr> </tbody> </table>	Sr. No.	Topic	Submissions/Assessment	COs covered	1.	Light	MSE, ESE and Continuous Evaluation	COBOP1010.1	2.	Polarised light	MSE, ESE and Continuous Evaluation	COBOP1010.5	3.	Interference	MSE, ESE and Continuous Evaluation	COBOP1010.2	4.	Telescope	MSE, ESE and Continuous Evaluation	COBOP1010.3	5.	LASERs	MSE, ESE and Continuous Evaluation	COBOP1010.4			
Sr. No.	Topic	Submissions/Assessment	COs covered																								
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4.	Telescope	MSE, ESE and Continuous Evaluation	COBOP1010.3																								
5.	LASERs	MSE, ESE and Continuous Evaluation	COBOP1010.4																								
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3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks																								

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1010.1			1	2	1					1	2			
COBOP1010.2			1	2	1					1	2			
COBOP1010.3			1	2	1					1	2			
COBOP1010.4			1	2	1					1	2			
COBOP1010.5			1	2	1					1	2			
Average			1	2	1					1	2			

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP1701: NUTRITION

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code BOP1701	4. L-T-P 2-0-0	5. Credits 2
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) None			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Introduction to Nutrition & Energy Unit II: Proteins & Fats Unit III: Vitamins & Minerals Unit IV: Essential Amino Acids			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30	Tutorials: 0	Practical's: 0	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1701.1	Understand nutritional deficiencies.		
COBOP1701.2	Outline the knowledge of Balanced diet, Protein, carbohydrates, vitamins, Minerals, carotenoids and eye. & Nutrition and Ocular aging. Adverse effects of ocular nutritional supplement		
COBOP1701.3	Apply knowledge of different ocular conditions occurring from nutritional deficiencies.		
13. UNIT WISE DETAILS		No. of Units: 4	
Unit Number: 1	No. of Lectures: 6	Title: Introduction to Nutrition & Energy	
Content Summary: Introduction. History of Nutrition, Nutrition as a science, Food groups, RDA, Balanced diet, diet planning. Assessment of nutritional status. Energy, Units of energy. Measurements of energy and value of food, Energy expenditure. Total energy/calorie requirement for different age groups and diseases. Satiety value Energy imbalance- obesity, starvation. Limitations of the daily food guide.			
Unit Number: 2	No. of Lectures: 6	Title: Proteins & Fats	
Content Summary: Proteins Sources and functions, Essential and non- essential amino- acids. Incomplete and complete proteins, Supplementary foods. PEM and the eye Nitrogen balance, Changes in protein requirement. Fats Sources and functions, Essential fatty acids, Excess and deficiency, Lipids and the eye. Hyperlipidemia, heart diseases, atherosclerosis.			

Unit Number: 3 No. of Lectures: 6 Title: Vitamins & Minerals			
Content Summary: Minerals General functions and sources, Macro and micro minerals associated with the eye. Deficiencies and excess –ophthalmic complications (e.g., iron, calcium, iodine etc.) Vitamins General functions, and food sources, Vitamin deficiencies and associated eye disorders with particular emphasis to Vitamin A, Promoting sound habits in pregnancy, lactation and infancy. Nutrient with antioxidant. Properties, Digestion of Proteins, carbohydrates & lipids			
Unit Number: 4 No. of Lectures: 7 Title: Essential Amino Acids			
Content Summary: Essential amino acids. Miscellaneous-Measles and associated eye disorders, low birth weight, nutrients specific to eye and its deficiency disorder. Ocular complications to nutritional deficiencies			
14. Instructions for students - Before coming to the class please read about the topic - After every class, students go through the reading/reference material shared with them - After completing every topic, a quiz will be taken in class - Students must come to class on time - All students have to make class notes and participate in class discussion - All student must secure at least 50% marks in each evaluation component - All students must maintain the attendance at least 80% - All student must submit a project either in group or single			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ☒ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....4.....		1. Weak 2. Moderate ☒ 3. High	
b) SDG.....10.....		1. Weak ☒ 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): NA			
18. Books Recommended: - M Swaminathan: Hand book of Food and Nutrition, fifth edition, Bangalore printing & publishing Co. Ltd, Bangalore, 2004 - C Gopalan, BV Rama Sastri, SC Balasubramanian: Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR, Hyderabad, 2004 - Frank Eperjesi & Stephen Beatty: Nutrition and the Eye A practical Approach, Elsevier Butterworth- Heinemann, USA, 2006			
19. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered

1.	Unit I	Assignment, MSE, ETE	COBOP1701.1
2.	Unit II	Assignment, MSE, ETE	COBOP1701.2
3.	Unit III	Assignment, MSE, ETE	COBOP1701.2
4.	Unit IV	Assignment, MSE, ETE	COBOP1701.3

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1701.1				2	1		1	2		1	2	1		1
COBOP1701.2				2	1		1	2		1	2	1		1
COBOP1701.3	2		1	2	2	1		2	1	2	3	2	1	1
Average	0.6		0.33	2	1.3	0.33	0.6	2	0.33	1.3	2.3	1.3	0.33	1

Level of Mapping/correlation

3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

CAP1401: COMPUTER APPLICATIONS IN HEALTHCARE RESEARCH

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5		3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry Semester: I		CAP1401	1-0-2	2
6. Type of Course (Tick one):	Programme Core Programme Elective Open Elective ✓ VAC			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ✓ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ✓ Basic Knowledge ✓				
10. Student centric methods used for enhancing learning experiences (Tick relevant)	✓ Experiential learning Participative Learning ✓ Problem solving methodologies			
11. Brief Syllabus: Unit I: Introduction to computer Unit II: Introduction of windows Unit III: Introduction to MS-Word Unit IV: Introduction to Excel Unit V: Introduction to power-point Unit VI: Introduction of Operating System Unit VII: Computer networks Unit VIII: Internet and its applications Unit IX: Informatics in Health Care Research				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 15		Tutorials: 0		Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP1401.1	Demonstrate knowledge about the various hardware and software of the computer system			
COBOP1401.2	Identify the differences between the various functions of the same			
COBOP1401.3	Learn to apply the knowledge of various fields of the course			
COBOP1401.4	Synthesize learning by making various presentations and graphics			
COBOP1401.5	Apply the structure, functionality and use of computers in the healthcare system e.g.: medical record systems, telemedicine applications or computer applications within medical education or public health.			
13. UNIT WISE DETAILS				No. of Units: 9
Unit Number: 1 No. of Lectures: 2 Title: Introduction to computer				
Content Summary: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages. Input output devices: Input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices (monitors, pointers, plotters, screen image projector, voice response systems).				

Processor and memory: The Central Processing UNIT (CPU), main memory. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.	
Unit Number: 2 No. of Lectures: 1 Title: Introduction of windows	
Content Summary: Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).	
Unit Number: 3 No. of Lectures: 1 Title: Introduction to MS-Word	
Content Summary: Introduction to MS-Word: Introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.	
Unit Number: 4 No. of Lectures: 1 Title: Introduction to Excel	
Content Summary: Introduction to Excel: Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.	
Unit Number: 5 No. of Lectures: 1 Title: Introduction to power-point	
Content Summary: Introduction to power-point: Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.	
Unit Number: 6 No. of Lectures: 1 Title: Introduction of Operating System	
Content Summary: Introduction of Operating System: Introduction, operating system concepts, types of operating system.	
Unit Number: 7 No. of Lectures: 1 Title: Computer networks	
Computer networks: Introduction, types of networks (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.	
Unit Number: 8 No. of Lectures: 2 Title: Internet and its applications	
Internet and its applications: Definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet. a. Application of Computers in clinical settings.	
Unit Number: 9 No. of Lectures: 2 Title: Informatics in Health Care Research	
Informatics in Health Care Research 1. Data collection 2. Qualitative: data bases 3. Quantitative: lotus, spreadsheets 4. Data analysis: qualitative and quantitative 5. Data Presentation 6. Social, ethical and legal issues 7. Trends and directions for the future	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)

a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High		
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High		
17. Title of Lab Manual (if applicable): NA			
18. Books Recommended: - Advanced Concepts in Operating Systems: Distributed Database and Multiprocessor Operating Systems by Singhal, Mukesh, Shivaratri, GNiranjan, Tata McGraw-Hill; 2 nd edition, 2011 - Computer and Information Technology by D. Tyagi, A.P.H Publishing Corporation; 1 st edition, 2010. - Biomedical Informatics: Computer Applications in Health Care and Biomedicine by Edward H. Shortliffe, James J. Cimino, Springer Science & Business Media; 4th edition, 2014.			
19. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented: Coursera Course on “Introduction to Computers and Office Productivity Software”			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COCAP1401.1, COCAP1401.2
2.	Unit II, Unit III, Unit IV, Unit V, Unit VI functions	Assignment, MSE, ETE	COCAP1401.3
3.	Unit VII, Unit VIII	Assignment, MSE, ETE	COCAP1401.4
4.	Unit IX	Assignment, MSE, ETE	COCAP1401.5
Value Added Experiments: NA			

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (1-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in

		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	External Component
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COCAP1401.1		1	2	2	1		1		1	2	2		2	1
COCAP1401.2		1	2	2	1		1		1	2	2		2	1
COCAP1401.3		1	2	2	1		1		1	2	2		2	1
COCAP1401.4		1	2	2	1		1		1	2	2		2	1
COCAP1401.5		1	2	2	1		1		1	2	2		2	1
Average		1	2	2	1		1		1	2	2		2	1

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

COM1007: INTRODUCTION TO COMMUNICATION SKILLS

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: I	3. Course Code	4. L-T-P	5. Credits
	COM1007	1-0-2	2
6. Type of Course (Tick one):	Programme Core ☒ VAC Programme Elective Open Elective		
7. Prerequisite(s), if any (Mention course code and name) 0- NA			
8. Frequency of offering (check one): ☒ Odd Even Any Semester Both Semester			
9. Focus: ☒ Employability Entrepreneurship ☒ Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)	☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus: UNIT 1- Communication Skills in English UNIT 2- Listening Skills UNIT 3- Reading Skills UNIT 4- Writing Skills UNIT 5- Communication Skills- Speaking Skills			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 24 Hours	Tutorials:	Practical's: 30 Hours	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COCOM1007.1	Create foundation for skills like effective communication that can help the student to comprehend and counsel the patient effectively		
COCOM1007.2	Develop and teach effective and appropriate gestures while interacting with the patient and his accompanying persons using a positive word while explaining the condition or procedure to them.		
COCOM1007.3	Develop the student capable of writing official communications like emails, letters and other requests.		
COCOM1007.4	Discover the student prepared for research writing and for preparing presentations and seminars as a part of academic related activities		
COCOM1007.5	To enhance phonetic competence, comprehension skills, presentation skills, group discussion skills etc.		
13. UNIT WISE DETAILS			No. of Units: __05__
Unit Number: 1 No. of Lectures: 3 Title: Communication Skills in English			

Content Summary: Introduction, The Importance of English, English as the First or Second language, Uses of English	
Unit Number: 2 No. of Lectures: 3 Title: Listening Skills	
Content Summary: What is listening?, Types of Listening, Objectives, Active Listening- an Effective Listening Skill, Note Taking Tips, Barriers for Good Listening, Purpose of Listening	
Unit Number: 3 No. of Lectures: 3 Title: Reading Skills	
Content Summary: Importance of Reading, Levels of Reading, Requirements of Reading, Types of Reading, Techniques of Reading, Academic Reading Tips	
Unit Number: 4 No. of Lectures: 3 Title: Writing Skills	
Content Summary: What is writing?, The Sentence, The Phrase, Kinds of Sentences, Types of Sentences, Time Management Tips, Test Preparation Tips, Tips for Taking Exams, What is a Paragraph?, Construction of Paragraph, Linkage and Cohesion, Example, Academic Essay Writing, Precise Writing, Letter Writing, Resume writing	
Unit Number: 5 No. of Lectures: 3 Title: Communication Skills- Speaking Skills	
Content Summary: Definition, Barriers of Communication, Types of Communication, Know What You Want To Say	
14. Title of Lab Manual (if applicable): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....3.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....NA.....	1. Weak 2. Moderate 3. High
17. Books Recommended: • Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011 • Communication skills, Sanjay Kumar, Pushpalata, 1stEdition, Oxford Press, 2011 • Organizational Behaviour, Stephen .P. Robbins, 1stEdition, Pearson, 2013 • Brilliant- Communication skills, Gill Hasson, 1stEdition, Pearson Life, 2011 • The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5thEdition, Pearson, 2013 • Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD, 2010 • Communication skills for professionals, Konar nira, 2ndEdition, New arrivals – PHI, 2011 • Personality development and soft skills, Barun K Mitra, 1stEdition, Oxford Press, 2011 • Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011 • Soft skills and professional communication, Francis Peters SJ, 1stEdition, Mc Graw Hill Education, 2011 • Effective communication, John Adair, 4thEdition, Pan Mac Millan,2009 • Bringing out the best in people, Aubrey Daniels, 2ndEdition, Mc Graw Hill, 1999 • Communication Skills by S. Kumar and P. Lata, New Delhi Oxford University Press; 2 ND edition, 2015. • Business Communication: Making Connections in a Digital World by R. V. Lesikar, M.E. Flatley, K. Rentz and Pandey, Tata McGraw Hill; 11th edition, 2009. • A Communicative Grammar of English. by Leech, Geoffrey and Jan Svartvik, Pearson;3rd edition, 2003. Reference Books: • We Need to Talk: How to Have Conversations That Matter • Power Questions: Build Relationships, Win New Business, and Influence Others • Just Listen: Discover the Secret to Getting Through to Absolutely Anyone • Five Stars: The Communication Secrets to Get from Good to Great E-Book: NA Reference websites: NA	
18. E-Learning Resources: NA	
NPTEL: NA	

Animated Lab Videos: NA			
MOOC Supplemented: Coursera Course on “Improving Communication Skills”			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	The Importance of English	Exams (MSE & ETE) Assignment	COCOM1007.1
2.	Active Listening- an Effective Listening Skill	Exams (MSE & ETE) Assignment	COCOM1007.2
3.	Academic Essay Writing, Precise Writing, Letter Writing, Resume writing	Exams (MSE & ETE) Assignment	COCOM1007.3, COCOM1007.4
4.	Types of Communication	Exams (MSE & ETE) Assignment	COCOM1007.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Practical Content

Sr. No.	Title of the Experiment	Software/Hardware based	Unit covered	Time Required
1.	Audio visual assignments in language lab to be completed	NA	1,2 and 3	8 Hours
2.	Presentations	NA	2 and 3	8 Hours
3.	Role- play	NA	4 and 5	6 Hours
4.	Phonetics –Spoken Practice	NA	5	8 Hours

Project (To be done as individual/in group): Prepare a presentation on any topic of your choice and present before the whole class.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (1-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz -	20%	

		Internal		
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Effective Writing Skills	Fluency	Content	Convention and Vocabulary
Phonetics	Fluency	Pronunciation	Tailored Exercise
Grammatical Errors	Spelling Mistakes	Conjunctions, Articles	Tenses
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COCOM1007.1		3	2	2		3	1	1	2	3	3		2	3
COCOM1007.2		3	2	2		3	1	1	2	3	3		2	3
COCOM1007.3		3	2	2		3	1	1	2	3	3		2	3
COCPM1007.4		3	2	2	2	3	1	1	2	3	3		2	3
COCOM1007.5		3	2	2		3	1	1	2	3	3		2	3
Average		3	2	2	0.4	3	1	1	2	3	3		2	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

Semester II

BOP1004: OCULAR ANATOMY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code BOP 1004	4. L-T-P 2-0-2	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name) BOP 1001 General Anatomy			
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐			
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☐			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies	
11. Brief Syllabus:			
Unit-I: ANATOMY OF THE ORBIT: Orbital structure, extra ocular muscles Unit-II Anatomy of the eyeball. REFRACTORY MEDIA: Aqueous humour, Anterior chamber, Posterior chamber, Crystalline Lens, Vitreous body Unit-III Anatomy of the eyelids, eye lashes and lacrimal apparatus Unit-IV Anatomy of the sclera, conjunctiva, cornea, uvea (iris+ciliary body+choroid) Unit-V Anatomy of the optic nerve & retina. Unit-VI Embryology			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30	Tutorials: Nil	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1004.1	Elaborate the normal functioning of all structures of the eye and their development		
COBOP1004.2	Understand about the shape of the ocular structure and its movement.		

COBOP1004.3	Outline the bones forming the walls of orbit
COBOP1004.4	Differentiate various structures in the outer, middle, and inner coats of eyeball
COBOP1004.5	Explain about Optic Nerve, Retina, and visual pathway
13. UNIT WISE DETAILS	No. of Units: 06
Unit Number: 1	No. of Lectures: 2 Title: ANATOMY OF THE ORBIT:
Content Summary: Orbital structure, extra ocular muscles	
Unit Number: 2	No. of Lectures: 2 Title: anatomy of the eyeball
Content Summary:	
Unit Number: 3	No. of Lectures: 2 Title: anatomy of the eyelids, eye lashes and lacrimal apparatus
Content Summary: Anatomy of the eyelids, eye lashes and lacrimal apparatus	
Unit Number: 4	No. of Lectures: 2 Title: anatomy of the sclera, conjunctiva, cornea, uvea (iris+ciliary body+choroid)
Content Summary: Anatomy of the sclera, conjunctiva, cornea, uvea (iris+ciliary body+choroid)	
Unit Number: 5	No. of Lectures: 2 Title: anatomy of the optic nerve & retina.
Content Summary: Anatomy of the optic nerve & retina.	
Unit Number: 6	No. of Lectures: 2 Title: EMBRYOLOGY
Content Summary: Embryology	
14. Instructions for students • Before coming in the class please read about general anatomy. • All students should be able to identify different anatomical parts of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate ✓ 3. High
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended: Reference Books: Anatomy & Physiology of Eye by AK Khurana	

E-Book: NA			
Reference websites: NA			
19. E-Learning Resources: NA			
NPTEL: NA			
Animated Lab Videos: NA			
MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Anatomy of the orbit	MSE, ESE and Continuous Evaluation	COBOP1004.2, COBOP1004.3
2.	Anatomy of the eyeball	MSE, ESE and Continuous Evaluation	COBOP1004.1
3.	Anatomy of the eyelids, eye lashes and lacrimal apparatus	MSE, ESE and Continuous Evaluation	COBOP1004.4
4.	Anatomy of the sclera, conjunctiva, cornea, uvea (iris+ciliary body+ choroid)	MSE, ESE and Continuous Evaluation	COBOP1004.4
5.	Anatomy of the optic nerve & retina	MSE, ESE and Continuous Evaluation	COBOP1004.5
6.	Embryology	MSE, ESE and Continuous Evaluation	COBOP1004.1
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner

Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1004.1	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1004.2	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1004.3	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1004.4	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1004.5	2		3	2	3	3	1	2	1	2	3	3	2	1
Average	2		3	2	3	3	1	2	1	2	3	3	2	1

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP1005: OCULAR PHYSIOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code BOP 1005	4. L-T-P 2-0-2	5. Credits 3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) BOP 1002 General Physiology				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Protective mechanisms in the eye: Eye lids and lacrimation, description of the globe Extrinsic eye muscles, their actions and control of their movements Coats of the eye ball 4. Cornea Unit-II Aqueous humor and vitreous: Intra ocular pressure Iris and pupil Crystalline lens and accommodation – presbyopia Retina – structure and functions Vision – general aspects of sensation Unit-III Pigments of the eye and photochemistry The visual stimulus, refractive errors Visual acuity, Vernier acuity and principle of measurement Visual perception – Binocular vision, stereoscopic vision, optical illusions Visual pathway, central and cerebral connections Unit-IV Colour vision and colour defects. Theories and diagnostic tests Introduction to electro physiology Scotopic and Photopic vision Color vision, Color mixing Unit-V Mechanism of accommodation				

Retinal sensitivity and Visibility Receptive stimulation and flicker Ocular, movements and saccades Visual perception and adaptation Introduction to visual psychology (Psychophysics).		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 30	Tutorials: Nil	Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP1005.1	Elaborate the normal functioning of all structures of the eye and their interactions	
COBOP1005.2	Elucidate the physiological aspects of normal growth and development of the eye	
COBOP1005.3	Outline the phenomenon of vision	
COBOP1005.4	Support the physiological principles underlying pathogenesis and treatment of diseases of the eye	
COBOP1005.5	Relate the neurophysiology of vision.	
13. UNIT WISE DETAILS		No. of Units: 05
Unit Number: 1	No. of Lectures: 4	Title: Eye Mechanism
Content Summary: Protective mechanisms in the eye: Eye lids and lacrimation, description of the globe Extrinsic eye muscles, their actions and control of their movements Coats of the eye ball 4. Cornea		
Unit Number: 2	No. of Lectures: 5	Title: Eye physiology & Vision
Content Summary: Aqueous humor and vitreous: Intra ocular pressure Iris and pupil Crystalline lens and accommodation – presbyopia Retina – structure and functions Vision – general aspects of sensation		
Unit Number: 3	No. of Lectures: 5	Title: Visual acuity and pathway
Content Summary: Pigments of the eye and photochemistry The visual stimulus, refractive errors Visual acuity, Vernier acuity and principle of measurement Visual perception – Binocular vision, stereoscopic vision, optical illusions Visual pathway, central and cerebral connections		
Unit Number: 4	No. of Lectures: 5	Title: Colour Vision
Content Summary: Colour vision and colour defects. Theories and diagnostic tests Introduction to electro physiology Scotopic and Photopic vision Color vision, Color mixing		
Unit Number: 5	No. of Lectures: 5	Title: Visual perception & adaptation.
Content Summary: Mechanism of accommodation Retinal sensitivity and Visibility		

Receptive stimulation and flicker Ocular, movements and saccades Visual perception and adaptation Introduction to visual psychology (Psychophysics).	
Practical - Lid movements - Tests for lacrimation tests - Extra ocular movements - Break up time - Pupillary reflexes - Applanation tonometry - Schiotz tonometry. - Measurement of accommodation and convergence - Visual acuity measurement. - Direct ophthalmoscopy - Indirect ophthalmoscopy - Retinoscopy - Light and dark adaptation. - Binocular vision (Stereopsis)	
14. Instructions for students - Before coming in the class please read about general physiology. - All students should be able to identify different anatomical parts of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate ✓ 3. High
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended: Reference Books: - AK Khurana, Indu Khurana: Anatomy and Physiology of Eye, Second edition, CBS Publishers, New Delhi, 2006 - RD Ravindran: Physiology of the eye, Arvind eye hospitals, Pondicherry, 2001 2. PL Kaufman, A Alm: Adler's Physiology of the eye clinical application, 10th edition, Mosby, 2002 E-Book: NA	

Reference websites: NA			
19. E-Learning Resources: NA			
NPTEL: NA			
Animated Lab Videos: NA			
MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP1005.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP1005.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP1005.3
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP1005.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP1005.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1005.1	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1005.2	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1005.3	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1005.4	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1005.5	2		3	2	3	3	1	2	1	2	3	3	2	1
Average	2		3	2	3	3	1	2	1	2	3	3	2	1

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP1008: GEOMETRICAL OPTICS II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code BOP 1008	4. L-T-P 2-0-2	5. Credits 3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☐ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
Brief Syllabus: Unit-I: Vergence and vergence techniques revised, Gullstrand's schematic eyes, visual acuity, Stile Crawford, Emmetropia and ametropia. Unit-II Blur retinal Imaginary, Correction of spherical ametropia, vertex distance and effective power, dioptric power of the spectacle, to calculate the dioptric power, angular magnification of spectacles in aphakic, thin lens model of the eye –angular magnification –spectacle and relative spectacle magnification. Unit-III Aperture stops- entrance and exit pupils, Astigmatism. - To calculate the position of the line image in a sphero-cylindrical lens, Accommodation –Accommodation formulae and calculations Unit-IV Presbyopia- Spectacle magnification, angular magnification of spectacle lens, near point, calculation of add, depth of field, Spatial distribution of optical information- modulation transfer functions- Spatial filtering- applications, Visual optics of aphakia and pseudophakia. Practical: • Construction of a tabletop telescope – all three types of telescopes. • Construction of a tabletop microscope • Imaging by a cylindrical lens – relationship between cylinder axis and image orientation • Imaging by two cylinders in contact – determination of the position of CLC; verification of CLC using a spherical lens with power equal to the spherical equivalent; orientations and position of the line images and their relation to the cylinders' powers and orientations • 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				

Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 30	Tutorials: Nil	Practical's: 30
11. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP1008.1	Create a strong basics in optics and equip the students with a thorough knowledge of mirrors and lenses.	
COBOP1008.2	Compare & predict the basic properties of the images formed on the retina by the optics of the eye.	
COBOP1008.3	Relate to Optometric Optics, Visual Optics and Contact lenses	
COBOP1008.4	Develop understand the nature of light and its effects on the eye and to predict the aberration that can occur in eye	
COBOP1008.6	Demonstrate the optics of ametropia.	
12. UNIT WISE DETAILS		No. of Units: 04
Unit Number: 1	No. of Lectures: 4	Title: Vergence
Content Summary: Vergence and vergence techniques revised, Gullstrand's schematic eyes, visual acuity, Stile Crawford, Emmetropia and ametropia.		
Unit Number: 2	No. of Lectures: 5	Title: Magnification
Content Summary: Blur retinal Imaginary, Correction of spherical ametropia, vertex distance and effective power, dioptric power of the spectacle, to calculate the dioptric power, angular magnification of spectacles in aphakic, thin lens model of the eye –angular magnification –spectacle and relative spectacle magnification.		
Unit Number: 3	No. of Lectures: 5	Title: Entrance and exit pupils
Content Summary: Aperture stops- entrance and exit pupils, Astigmatism. - To calculate the position of the line image in a sphero-cylindrical lens, Accommodation –Accommodation formulae and calculations		
Unit Number: 4	No. of Lectures: 5	Title: Spectacle magnification
Content Summary: Presbyopia- Spectacle magnification, angular magnification of spectacle lens, near point, calculation of add, depth of field, Spatial distribution of optical information- modulation transfer functions- Spatial filtering- applications, Visual optics of aphakia and pseudophakia.		
Practical - Construction of a tabletop telescope – all three types of telescopes. - Construction of a tabletop microscope - Imaging by a cylindrical lens – relationship between cylinder axis and image orientation - Imaging by two cylinders in contact – determination of the position of CLC; verification of CLC using a spherical lens with power equal to the spherical equivalent; orientations and position of the line images and their relation to the cylinders' powers and orientations - 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		
13. Instructions for students - Before coming in the class please read about geometrical optics I. - All students should be able to have good knowledge of physical optics - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.		
14. Multi-Disciplinary Approach		

(Please mention whether this course is multidisciplinary or not) Yes No ✓			
Describe (if yes): NA			
15. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3	1. Weak 2. Moderate ✓ 3. High		
b) SDG: NA	1. Weak 2. Moderate 3. High		
16. Title of Lab Manual (if applicable): Not applicable			
17. Books Recommended: Reference Books: - Tunnacliffe A. H, Hirst J. G, Optics, The association of British Dispensing Opticians, London, U.K., 1990. - Pedrotti L. S, Pedrotti Sr. F. L, Optics and Vision, Prentice Hall, New Jersey, USA, 1998. - Loshin D. S. The Geometric Optics Workbook, Butterworth-Heinemann, Boston, USA, 1991. - Schwartz S. H. Geometrical and Visual Optics: A Clinical Introduction, McGraw-Hill, New York, USA, 2002. E-Book: NA Reference websites: NA			
18. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP1008.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP1008.2, COBOP1008.3
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP1008.5
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP1008.4
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
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1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1008.1	1		1		1					1	3	1	1	1
COBOP1008.2	1		1		1					1	3	1	1	1
COBOP1008.3	1	1	2	2	2	2	2	2	2	2	3	2	2	1
COBOP1008.4	1	1	2	2	2	2	2	2	2	2	3	2	2	1
COBOP1008.5	1	1	2	2	2	2	2	2	2	2	3	2	2	1
Average	1	0.6	1.6	1.2	1.6	1.2	1.2	1.2	1.2	1.6	3	1.6	1.6	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP1011: BASIC & OCULAR BIOCHEMISTRY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code BOP 1011	4. L-T-P 2-0-2	5. Credits 3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) BOP 1001 General Anatomy				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Carbohydrates: 3 hrs Classification, Structure, metabolism, properties and functions Unit-II Proteins: 3 hrs Classification of proteins and amino acids, structure, properties and function. Unit-III Lipids: 5 hrs Classification of lipids, Classification and properties of fatty acids, phospholipids and sterols, Lipid metabolism Unit-IV Nucleic acids: 5 hrs Nucleosides and nucleotides, Structure of DNA and RNA and their functions, semiconservative replication of DNA, Transcription and Translation. Unit-V Vitamins: 4 hrs Requirements, properties and deficiency of fat soluble vitamins (A, D, E and K) and water soluble vitamins (B1, B2, B6, B12, C). Unit-VI Minerals: 4 hrs Requirements, availability and functions of Na, K, Ca, P, Fe, Cu, Mg and Se Unit –VII Enzymes: 6 hrs Introduction, properties and classification of enzymes. Enzyme kinetics, Enzyme inhibitors, Regulation of enzymes, Therapeutic and diagnostic applications of enzymes and isozymes.				

Unit – VIII		
Nutrition and Physical activities:		6 hrs
Importance of nutrition, Calorific values, Respiratory quotient and its significance, Energy requirement of a person, Basal Metabolic Rate, factor affecting BMR, Energy expenditure for various activities, Balanced diet; RDA		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 36	Tutorials: Nil	Practical's: 24
12. Course Outcomes (COs)		
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP1011.1	Summarize the role biochemistry in the practice of medicine and appreciate the central and essential importance of water as polar solvent in biological chemistry	
COBOP1011.2	Outline a general understanding of the major types of biochemical molecules, including small, large and super molecular components found in cells	
COBOP1011.3	Enhance the clinical importance of enzymes, vitamins, hormones and minerals.	
COBOP1011.4	Classify different types of biochemical molecules and know their essential chemical characteristics that make them indispensable for life	
COBOP1011.5	Examine basic energy metabolism of cells and identify some of common reaction mechanisms in biochemical processes	
13. UNIT WISE DETAILS		No. of Units: 06
Unit Number: 1	No. of Lectures: 3	Title: Carbohydrates
Content Summary: Classification, Structure, metabolism, properties and functions		
Unit Number: 2	No. of Lectures: 3	Title: Proteins:
Content Summary: Classification of proteins and amino acids, structure, properties and function.		
Unit Number: 3	No. of Lectures: 5	Title: Lipids:
Content Summary: Classification of lipids, Classification and properties of fatty acids, phospholipids and sterols, Lipid metabolism		
Unit Number: 4	No. of Lectures: 5	Title: Nucleic acids:
Content Summary: Nucleosides and nucleotides, Structure of DNA and RNA and their functions, semiconservative replication of DNA, Transcription and Translation.		
Unit Number: 5	No. of Lectures: 4	Title: Vitamins
Content Summary: Requirements, properties and deficiency of fat soluble vitamins (A, D, E and K) and water soluble vitamins (B1, B2, B6, B12, C).		
Unit Number: 6	No. of Lectures: 4	Title: Minerals:
Content Summary: Requirements, availability and functions of Na, K, Ca, P, Fe, Cu, Mg and Se		
Unit Number: 7	No. of Lectures: 4	Title: Enzymes:
Content Summary: Introduction, properties and classification of enzymes. Enzyme kinetics, Enzyme inhibitors, Regulation of enzymes, Therapeutic and diagnostic applications of enzymes and isozymes.		
Unit Number: 8	No. of Lectures: 4	Title: Nutrition and Physical activities:
Content Summary: Importance of nutrition, Calorific values, Respiratory quotient and its significance, Energy requirement of a person, Basal Metabolic Rate, factor affecting BMR, Energy expenditure for various activities, Balanced diet; RDA		

14. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3	1. Weak	2. Moderate ✓	3. High
b) SDG: NA	1. Weak	2. Moderate	3. High
15. Title of Lab Manual (if applicable): Not applicable			
16. Books Recommended: Reference Books: - Biochemistry by Satyanarayana, Elsevier, Fifth edition.2017. - Textbook of Biochemistry and Human Biology by G.P.Talwar and L.M.Srivastava, Prentice Hall India Learning Private Limited; 3rd edition,2002 - Principles of Biochemistry by A.L Lehninger, D.L Nelson. and MM Cox, CBS Publishers and distributors, 2nd Ed.1993. E-Book: NA Reference websites: NA			
17. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP1011.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP1011.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP1011.4
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP1011.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP1011.3
6.	Unit VI	MSE, ESE and Continuous Evaluation	COBOP1011.3
7.	Unit VII	MSE, ESE and Continuous Evaluation	COBOP1011.3
8.	Unit VIII	MSE, ESE and Continuous Evaluation	COBOP1011.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in

		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	External Component
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1011.1				2	2	1			1	2	2	1		1
COBOP1011.2				2	2	1			1	2	2	1		1
COBOP1011.3				2	2	1			1	2	2	1		1
COBOP1011.4				2	2	1			1	2	2	1		1
COBOP1011.5				2	2	1			1	2	2	1		1
Average				2	2	1			1	2	2	1		1

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

ENV1701: ENVIRONMENTAL STUDIES

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 4.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	ENV 1701	3-0-0	3	
Semester: II				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☐				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus: Unit-I: Environment & Natural Resources: Definition, scope, importance, need for public, Natural Resources – forest resources – use, exploitation, deforestation, construction of multipurpose dams – effect on forests, Water resources – use of surface and subsurface water; effect of floods, drought, water conflicts, food resources – food problems, advantage and disadvantage of fertilizers & pesticides, effect on environment, Energy resources – need to develop renewable energy, land resources – Land degradation, landslides, soil erosion, desertification & case studies. Unit-II Ecology & Bio-diversity: Concept of ecosystem, structure & function of an ecosystem, producers, consumers and decomposers, energy flow, ecological succession, food chains, food webs and ecological pyramids. Bio diversity: Definition, genetic, species and ecosystem diversity, bio-geographical classification of India, hotspots, threats related to habitat loss, poaching of wildlife, man-wildlife conflicts, Conservation of bio-diversity. Unit-III Environmental Pollution: Definition – Causes, pollution effects and control measures of Air, Water, Soil, Marine, Noise, Thermal, Nuclear hazards. Solid waste management: causes, effects and control measures of urban and industrial wastes, pollution measures, case studies, Disaster management: floods, earthquake, cyclone and landslides. Unit-IV Social Issues and the Environment: Urban problems related to energy & sustainable development, water conservation, rain water harvesting, watershed management, problems related to rehabilitation – case studies, Wasteland reclamation, Consumerism and waste products - Environment Protection Act, Air, Water, Wildlife, Forest Conservation Act, Environmental legislation and public awareness. Unit-V Human Population and the Environment: Population growth, variation among nations, Population explosion – Family Welfare Programme, Environment and human health, Human Rights, Value Education, HIV/ AIDS, Women and Child Welfare, Role of Information Technology – Visit to local polluted site / Case Studies.				

Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 45	Tutorials: Nil	Practical's: Nil
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COENV1701.1	Gain knowledge on the importance of environmental education and ecosystem.	
COENV1701.2	Discuss the environmental pollution- sources, effects and control measures of environmental pollution.	
COENV1701.3	Understand the treatment of wastewater and solid waste management.	
COENV1701.4	Find the importance with respect to biodiversity, its threats and its conservation and appreciate the concept of interdependence.	
COENV1701.5	Discuss the national and international concern for environment for protecting the environment	
13. UNIT WISE DETAILS		No. of Units: 05
Unit Number: 1	No. of Lectures: 10	Title: Environment & Natural Resources
Content Summary: Definition, scope, importance, need for public, Natural Resources – forest resources – use, exploitation, deforestation, construction of multipurpose dams – effect on forests, Water resources – use of surface and subsurface water; effect of floods, drought, water conflicts, food resources – food problems, advantage and disadvantage of fertilizers & pesticides, effect on environment, Energy resources – need to develop renewable energy, land resources – Land degradation, landslides, soil erosion, desertification & case studies.		
Unit Number: 2	No. of Lectures: 6	Title: Ecology & Bio-diversity:
Content Summary: Ecology & Bio-diversity: Concept of ecosystem, structure & function of an ecosystem, producers, consumers and decomposers, energy flow, ecological succession, food chains, food webs and ecological pyramids. Bio diversity: Definition, genetic, species and ecosystem diversity, bio-geographical classification of India, hotspots, threats related to habitat loss, poaching of wildlife, man-wildlife conflicts, Conservation of bio-diversity.		
Unit Number: 3	No. of Lectures: 9	Title: Environmental Pollution:
Content Summary: Environmental Pollution: Definition – Causes, pollution effects and control measures of Air, Water, Soil, Marine, Noise, Thermal, Nuclear hazards. Solid waste management: causes, effects and control measures of urban and industrial wastes, pollution measures, case studies, Disaster management: floods, earthquake, cyclone and landslides.		
Unit Number: 4	No. of Lectures: 6	Title: Social Issues and the Environment
Content Summary: Social Issues and the Environment: Urban problems related to energy & sustainable development, water conservation, rain water harvesting, watershed management, problems related to rehabilitation – case studies, Wasteland reclamation, Consumerism and waste products - Environment Protection Act, Air, Water, Wildlife, Forest Conservation Act, Environmental legislation and public awareness		
Unit Number: 5	No. of Lectures: 5	Title: Human Population and the Environment
Content Summary: Human Population and the Environment: Population growth, variation among nations, Population explosion – Family Welfare Programme, Environment and human health, Human Rights, Value Education, HIV/ AIDS, Women and Child Welfare, Role of Information Technology – Visit to local polluted site / Case Studies.		
14. Instructions for students • Before coming in the class please read about environment • All students should be able to have good knowledge about our environment • All student must secure at least 50% marks in each evaluation component.		

- All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak	2. Moderate ✓ 3. High
b) SDG: 6		1. Weak	2. Moderate 3. High ✓
c) SDG: 12		1. Weak	2. Moderate 3. High ✓
d) SDG: 13		1. Weak	2. Moderate 3. High ✓
e) SDG: 15		1. Weak	2. Moderate 3. High ✓
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: 1. Textbook of Environmental Studies by Dave, Deeksha, S. S. Katewa, Cengage Learning, 2ND Edition, 2002. E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Environment & Natural Resources	MSE, ESE and Continuous Evaluation	COENV1701.1
2.	Ecology & Bio-diversity:	MSE, ESE and Continuous Evaluation	COENV1701.2
3.	Environmental Pollution	MSE, ESE and Continuous Evaluation	COENV1701.3
4.	Social Issues and the Environment	MSE, ESE and Continuous Evaluation	COENV1701.4
5.	Human Population and the Environment	MSE, ESE and Continuous Evaluation	COENV1701.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COENV1701.1			1	1	2				2		2			1
COENV1701.2			1	1	2				2		2			1
COENV1701.3			1	1	2				2		2			1
COENV1701.4			1	1	2				2		2			1
COENV1701.5			1	1	2				2		2			1
Average			1	1	2				2		2			1

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP1704:MEDICAL LAW AND ETHICS

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code	4. L -T- P	5. Credits	
	BOP1704	L -T- P 3 -0- 0	3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		Experiential learning ☒ Participative Learning Problem solving methodologies		
11. Brief Syllabus: This course deals with to equip the students with the basics of legal aspects of healthcare and to facilitate them with other core skills required for understanding consumer court cases etc. This course is designed to give students a comprehensive view of clinical aspects of laws pertaining to rights & duties of healthcare workers etc				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 45		Tutorials: Nil		Practicals:Nil
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP1704.1	Understand the key underlying ethical principles required in medicine.			
COBOP1704.2	Find ethical considerations and practice which are needed in a clinical field			
COBOP1704.3	Create an overview about the legal aspects linked to health care practice.			
COBOP1704.4	Apply medico legal litigations and to motivate high standard of ethical and legal aspects in the clinical practice			
COBOP1704.5	Relate the concepts of human rights and confidentiality as well as the research ethics and integrity.			

13. UNIT WISE DETAILS		No. of Units: 04	
Unit Number: 1 No. of Lectures: 3 Title: medical ethics & law			
Content Summary: Medical ethics versus medical law - Definition - Goal – Scope Introduction to Code of conduct Basic principles of medical ethics–Confidentiality			
Unit Number: 2 No. of Lectures: 3 Title: Malpractice and negligence			
Content Summary: Rational and irrational drug therapy, Autonomy and informed consent - Right of patients, Care of the terminally ill- Euthanasia, Organ transplantation			
Unit Number: 3 No. of Lectures: 3 Title: Medical diagnosis			
Content Summary: Medical diagnosis versus physiotherapy diagnosis, Medico legal aspects of medical records Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.			
Unit Number: 4 No. of Lectures: 3 Title: Development of standardized protocol			
Content Summary: Development of standardized protocol to avoid near miss or sentinel events Obtaining an informed consent			
14. Instructions for students			
(Write the step-wise instructions for the students)			
Instructions for students			
a. Review the previous class material: Before coming to class, it is important to review the material covered in the previous class. This will help you to better understand the new material and be prepared for any discussions or activities related to the previous topic.			
b. Preview the upcoming material: Previewing the material that will be covered in the upcoming class can help you to better understand the topic and be prepared with any questions you may have.			
c. Bring necessary materials: Ensure that you have all the necessary materials such as textbooks, notebooks, pens, pencils, and any other tools that may be needed for the class.			
d. Be on time: Arriving on time to class is important as it shows respect for the teacher and other students. It also helps you to not miss any important information or announcements.			
e. All student must secure at least 50% marks in each evaluation component			
f. All students must maintain the attendance at least 75%			
g. All student must submit a project either in group or single			
h. Be open-minded: Approach the class with an open mind and be willing to learn and participate. This can help you to get the most out of the class and improve your understanding of the subject.			
i. Mental preparation: Prior to attending class, students should prepare themselves mentally by eliminating any distractions, focusing on the subject matter at hand.			
15. Multi-Disciplinary Approach			
(Please mentioned whether this course is multidisciplinary or not)			
Yes		No ✓	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....3.....		1. Weak 2. Moderate 3. High ✓	
b) SDG.....NA.....		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable):			
18. Books Recommended:			
1. Medical Law in India by Mohammad Naseem, Saman Naseem 2019			
2. Medical Law and Ethics by Bonnie Fremgen 2019			
E-Book: NA			

Reference websites:			
19. E-Learning Resources			
NPTEL: Animated Lab Videos: MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Mid Semester Exams	COBOP1704.1, COBOP1704.2
2.	Unit II	Mid Semester Exams	COBOP1704.3, COBOP1704.4
3.	Unit III	Mid Semester Exams	COBOP1704.4
4.	Unit IV	Mid Semester Exams	COBOP1704.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assesment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Practical Content

Sr. No.	Title of the Experiment	Software/Hardware based	Unit covered	Time Required
Value Added Experiments: NA				

Project (To be done as individual/in group): NA

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Average learner	Fast paced learner

Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1704.1		1	3	2	2		2	1	3		2		1	
COBOP1704.2		1	3	2	2		2	1	3		2		1	
COBOP1704.3		1	3	2	2		2	1	3		2		1	
COBOP1704.4		1	3	2	2		2	1	3		2		1	
COBOP1704.5		1	3	2	2		2	1	3		2		1	
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP 1705: INTRODUCTION TO QUALITY AND PATIENT SAFETY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: II	3. Course Code BOP 1705	4. L-T-P 2-0-0	5. Credits 2	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: a. Concepts of Quality of Care b. Quality Improvement Approaches c. Standards and Norms d. Quality Improvement Tools e. Introduction to NABH guidelines Unit-II: a. Vital signs and primary assessment b. Basic emergency care – first aid and triage c. Ventilations including use of bag-valve-masks (BVMs) d. Choking, rescue breathing methods e. One- and Two-rescuer CPR f. Using an AED (Automated external defibrillator). g. Managing an emergency including moving a patient Unit-III: a. Definition of Biomedical Waste b. Waste minimization c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding) d. Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste e. BMW Management & methods of disinfection f. Modern technology for handling BMW				

g. Use of Personal protective equipment (PPE) h. Monitoring & controlling of cross infection (Protective devices)		
Unit-IV		
a.Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated infections,		
b.Components of an effective infection control program, and		
c.Guidelines (NABH and JCI) for Hospital Infection Control		
Unit-V		
a. History of Antibiotics		
b. How Resistance Happens and Spreads		
c. Types of resistance- Intrinsic, Acquired, Passive		
d. Trends in Drug Resistance		
e. Actions to Fight Resistance		
f.Bacterial persistence		
g.Antibiotic sensitivity		
h.Consequences of antibiotic resistance		
i.Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals		
Unit VI		
Management,		
Psychological impact management,		
Resource management,		
Preparedness and risk reduction,		
Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms.		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 30	Tutorials: Nil	Practical's: Nil
12. Course Outcomes (COs)		
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP1705.1	Examine quality improvement approaches, NABH, NABL, JCI guidelines which purely focuses on the quality measures and proper handling of disposals providing quality facility to patients.	
COBOP1705.2	Appraise basic life support skills which can save many lives in urgent cases and to have fundamentals of emergency management, disaster preparedness	
COBOP1705.3	Inspect proper disposal of biomedical waste, reducing the risk of infection to waste handling personnel and cross infection which can occur due to improper handling of infected waste polluting surroundings too.	
COBOP1705.4	Apply effective hand hygiene, prevention and control of common healthcare associated infections.	
COBOP1705.5	Appraise knowledge of antimicrobial resistance	
13. UNIT WISE DETAILS	No. of Units: 06	
Unit Number: 1	No. of Lectures: 2	Title: Quality assurance and management
Content Summary:		
Quality assurance and management–		
The objective of the course is to help students understand the basic concepts of quality in health Care and develop skills to implement sustainable quality assurance programing the health system.		
a. Concepts of Quality of Care		
b. Quality Improvement Approaches		
c. Standards and Norms		
d. Quality Improvement Tools		
e. Introduction to NABH guidelines		
Unit Number: 2	No. of Lectures: 2	Title: Basics of emergency care and life support skills

Content Summary: Basics of emergency care and life support skills– Basic life support (BLS) is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage. Topics to be covered under the subject are as follows: - Vital signs and primary assessment - Basic emergency care – first aid and triage - Ventilations including use of bag-valve-masks (BVMs) - Choking, rescue breathing methods - One- and Two-rescuer CPR - Using an AED (Automated external defibrillator). - Managing an emergency including moving a patient
Unit Number: 3 No. of Lectures: 2 Title: Bio medical waste management and environment safety-
Content Summary: Bio medical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows: - Definition of Biomedical Waste - Waste minimization - BMW – Segregation, collection, transportation, treatment and disposal (including color coding) - Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste - BMW Management & methods of disinfection - Modern technology for handling BMW - Use of Personal protective equipment (PPE) - Monitoring & controlling of cross infection (Protective devices)
Unit Number: 4 No. of Lectures: 2 Title: Infection prevention and control
Content Summary: Infection prevention and control- The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital acquired infections and improve health outcomes. Concepts taught should include– - Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated infections, - Components of an effective infection control program, and - Guidelines (NABH and JCI) for Hospital Infection Control
Unit Number: 5 No. of Lectures: 2 Title: Antibiotic Resistance-
Content Summary: - History of Antibiotics - How Resistance Happens and Spreads - Types of resistance- Intrinsic, Acquired, Passive - Trends in Drug Resistance - Actions to Fight Resistance - Bacterial persistence - Antibiotic sensitivity - Consequences of antibiotic resistance - Antimicrobial Stewardship- Barriers and opportunities, Tools and models in hospitals
Unit Number: 6 No. of Lectures: 2 Title: Disaster preparedness and management

Content Summary: Disaster preparedness and management- The objective of this section will be to provide knowledge on the principles of on-site disaster management. Concepts to be taught should include- management, Psychological impact management, Resource management, Preparedness and risk reduction, Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command and institutional mechanisms															
14. Instructions for students - Before coming in the class please read about eye diseases - All students should be able to know the systemic diseases and their ocular manifestations - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.															
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA															
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)													
a) SDG: 3		1. Weak 2. Moderate 3. High ✓													
b) SDG: NA		1. Weak 2. Moderate 3. High													
17. Title of Lab Manual (if applicable): Not applicable															
18. Books Recommended: - K S Ratnagar: Pathology of the eye & orbit, Jaypee brothers Medical Publishers, 1997 - CORTON KUMAR AND ROBINS: Pathological Basis of the Disease, 7th Edition, Elsevier, New Delhi, 2004. - S R Lakhani Susan AD & Caroline JF: Basic Pathology: An introduction to the mechanism of disease, 1993. E-Book: NA Reference websites: NA															
19 E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA															
Experiential Learning Component <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 40%;">Topic</th> <th style="width: 30%;">Submissions/Assessment</th> <th style="width: 20%;">COs covered</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Quality assurance and management</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1705.1</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Basics of emergency care and life support skills</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP1705.2</td> </tr> </tbody> </table>				Sr. No.	Topic	Submissions/Assessment	COs covered	1.	Quality assurance and management	MSE, ESE and Continuous Evaluation	COBOP1705.1	2.	Basics of emergency care and life support skills	MSE, ESE and Continuous Evaluation	COBOP1705.2
Sr. No.	Topic	Submissions/Assessment	COs covered												
1.	Quality assurance and management	MSE, ESE and Continuous Evaluation	COBOP1705.1												
2.	Basics of emergency care and life support skills	MSE, ESE and Continuous Evaluation	COBOP1705.2												

3.	Bio medical waste management and environment safety-	MSE, ESE and Continuous Evaluation	COBOP1705.3
4.	Infection prevention and control	MSE, ESE and Continuous Evaluation	COBOP1705.4
5.	Antibiotic Resistance-	MSE, ESE and Continuous Evaluation	COBOP1705.5
6.	Disaster preparedness and management	MSE, ESE and Continuous Evaluation	COBOP1705.2

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1705.1		1		2				2	1		3	1	1	3
COBOP1705.2		1		2				2	1		3	1	1	3
COBOP1705.3		1		2				2	1		3		1	3
COBOP1705.4		1		2				2	1		3		1	3
Average		1		2				2	1		3		1	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation***BOP1502: CLINICAL OPTOMETRY-I**

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5	3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry	BOP 1502	0-0-4	2
Semester: II			
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name)			
BOP 1501 Introduction to clinical optometry			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus:			
Students will observe the basic operations of the optometry clinic while interacting with the multidisciplinary team members involved in providing optimal care to patients. The student will be introduced to optical terminology, equipment, and techniques used for treatment.			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: Nil		Tutorials: Nil	Practical's: 60
12. Course Outcomes (COs)			
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP1502.1	Make use of professional communication as well as revision of visual acuity measurements.		
COBOP1502.2	Perform and interpret entrance examinations, the core of comprehensive eye exams. Properly performed entrance testing leads to decisions of which secondary tests to perform. Students will learn with confidence how to perform and interpret these procedures.		
COBOP1502.3	Prioritize testing, and the knowledge of when to perform these tests, is crucial. Students will learn the techniques of each procedure and understand when to perform them.		
COBOP1502.4	Demonstrate understanding of objective refraction. Basic principle of performing the technique and interpreting results of objective refraction, a measurement of refractive error.		
COBOP1502.5	Demonstrate color vision and pupil evaluation		
13. UNIT WISE DETAILS		No. of Units: 01	

Unit Number: I		No. of Lectures: 60hrs	
Students will observe the basic operations of the optometry clinic while interacting with the multidisciplinary team members involved in providing optimal care to patients. The student will be introduced to optical terminology, equipment, and techniques used for treatment.			
14. Instructions for students NA			
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP1502.1, COBOP1502.2, COBOP1502.3, COBOP1502.4, COBOP1502.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-4)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1502.1	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1502.2	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1502.3	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1502.4	2		3	2	3	3	1	2	1	2	3	3	2	1
COBOP1502.5	2		3	2	3	3	1	2	1	2	3	3	2	1
Average	2		3	2	3	3	1	2	1	2	3	3	2	1

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP1504: COMPUTATIONAL TOOLS IN HEALTH CARE DELIVERY

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 4.5 Program Name: Bachelor of Optometry Semester: II		3. Course Code	4. L-T-P	5. Credits
		BOP1504	0-0-4	2
6. Type of Course (Tick one):	Programme Core Programme Elective ☒ Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus: Unit I: Advanced Computational Tools in Healthcare Unit II: Advanced Microsoft Excel as Computational Tool in Healthcare Unit III: Case Study—Epidemiology				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: 0		Practical's: 60
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP1504.1	Demonstrate understanding of advanced computational tools used in healthcare, including their features, capabilities, and relevance to healthcare applications.			
COBOP1504.2	Recall key features and functions of Microsoft Excel relevant to healthcare data analysis and computational tasks.			
COBOP1504.3	Apply advanced computational tools to analyze healthcare data sets, interpret results, and draw meaningful conclusions in various healthcare contexts.			
COBOP1504.4	Synthesize epidemiological data and findings from a healthcare case study to formulate evidence-based conclusions and propose strategies for disease prevention or health promotion.			
13. UNIT WISE DETAILS No. of Units: 3				
Unit Number: 1 No. of Lectures: 8 Title: Advanced Computational Tools in Healthcare				
Content Summary: Community participation in healthcare delivery system Healthcare in developed countries Data Collection Types of Data collection Data Interpretation				
Unit Number: 2 No. of Lectures: 5 Title: Advanced Microsoft Excel as Computational Tool in Healthcare				
Content Summary: Overview of the Excel Advanced Formulae & Functions Tables and Charts in Excel				

Data Validation Working with templates Sorting & Filtering data Working with reports Creating pivot tables Power functions (CountIf, CountIFS, SumIF, SsumIFS)	
Unit Number: 3 No. of Lectures: 5 Title: Case Study—Epidemiology	
Content Summary: Case reports Case series Ecological studies Cross sectional studies Case control studies Retrospective cohort studies Prospective cohort studies Randomized clinical studies	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • Parks Text Book of Preventive & Social Medicine by K. Park, 24th edition,2017. • Review of preventive and social medicine by Vivek Jain, 10th edition, 2018 • “A First Course in Computers” by Sanjay Sexena, Vikas Publishing House, Second Edition,2010. • Computer fundamentals by Pekin and Priti Sinha, BPB Publications; Reprint Edition 2017Edition,2004 E-Book: Reference websites:	
19. E-Learning Resources NPTEL: Animated Lab Videos:	

MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP1504.1, COBOP1504.3
2.	Unit II	Assignment, MSE, ETE	COBOP1504.2
3.	Unit III	Assignment, MSE, ETE	COBOP1504.4

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the computer to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-4)	Regular Practical/Practice - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP1504.1	1		1		1					1	3	1	1	1
COBOP1504.2	1		1		1					1	3	1	1	1
COBOP15043	1	1	2	2	2	2	2	2	2	2	3	2	2	1
COBOP1504.4	1	1	2	2	2	2	2	2	2	2	3	2	2	1
Average	1	1	1.5	1	1.5	1	1	1	1	1.5	3	1.5	1.5	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

Semester III

BOP2101: OCULAR MICROBIOLOGY

1. Department/ School:	SCHOOL OF MEDICAL AND ALLIED SCIENCES		
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP2101	4. L-T-P 2-0-2	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Introduction to Microbiology Unit II: Sterilization and disinfection Unit III: Ocular Bacteriology Unit IV: Virus Unit V: Fungal Infection			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30	Tutorials: 0	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2101.1	Classify different procedures and techniques to find out the infection causing microorganisms.		
COBOP2101.2	Make use of different culture medias, staining techniques, biochemical tests for bacteria, antibiotic susceptibility test.		
COBOP2101.3	Compare the symptoms and differences related to bacterial and viral infections and drugs of choice.		
COBOP2101.4	Plan effective hand hygiene, prevention and control of common health care associated infections, sterilization and disinfection methods.		
COBOP2101.5	Assess ocular infections caused by Fungi and Parasites.		
13. UNIT WISE DETAILS		No. of Units: 5	
Unit Number: 1 No. of Lectures: 4 Title: Introduction to Microbiology			
Content Summary: Types of Microorganisms, Physiology of Microorganisms, Nutrition, Enzymes, Metabolism and energy, Microbial Growth			
Unit Number: 2 No. of Lectures: 5 Title: Sterilization and disinfection			
Content Summary: Sterilization in the laboratory, Control of Microbial Growth, Microbes versus Humans- The development of Infection, The disease process Pathogenicity and virulence			

Unit Number: 3 No. of Lectures: 5 Title: Ocular Bacteriology	
Content Summary: Gram positive, (Staphylococcus aureus, Staphylococcus epidermidis, Streptococcus, Propionibacterium, actinomyces, Nocardia) Bacteria including acid fast bacilli (Mycobacterium tuberculosis, Mycobacterium leprae) Gram negative Bacteria (pseudomonas, haemophilus, Brucella, Neisseria, Moraxella) Spirochetes (Treponema, Leptospirosis).	
Unit Number: 4 No. of Lectures: 5 Title: Virus	
Content Summary: Fungus, Virology (Classification of Viruses in Ocular Disease, Rubella, Adenovirus, Oncogenic Viruses (HPV, HBV, EBV, Retroviruses), HIV), and chlamydia.	
Unit Number: 5 No. of Lectures: 5 Title: Fungal Infection	
Content Summary: Common fungal infections of the eye, Common bacterial infections of the eye, Common viral infections of the eye. Common parasitic infections of the eye.	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • 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 • KJ Ryan, CG Ray: Sherris Medical Microbiology- An Introduction to infectious Diseases, fourth edition, McGraw HILL Publisher, New Delhi, 1994 MACKIE & McCartney Practical Medical Microbiology. E-Book: • KJ Ryan, CG Ray: Sherris Medical Microbiology- An Introduction to infectious Diseases, fourth edition, McGraw HiLL Publisher, NewDelhi, 1994 • MACKIE & McCartney Practical Medical Microbiology • SYDNEY M. FINEGOLD & ELLEN JO BARON: Diagnostic Microbiology (DM) Reference websites: • MICROBIOLOGICAL PROCEDURES FOR DIAGNOSIS OF OCULAR INFECTIONS ... • www.ijmm.org/documents/ocular.pdf • Ocular Microbiology List of High Impact Articles PPTs ...	

• www.omicsonline.org/scholarly/ocular. • Ocular microbiology MCQs - Flickerwick • www.mrcophth.com/MRCOphth/122.htm			
19. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP2101.1
2.	Unit II	Assignment, MSE, ETE	COBOP2101.2
3.	Unit III	Assignment, MSE, ETE	COBOP2101.3
4.	Unit IV	Assignment, MSE, ETE	COBOP2101.4
5.	Unit V	Assignment, MSE, ETE	COBOP2101.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group): Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
 (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2101.1	1		1	2	2				1	2	2		1	
COBOP2101.2	1		1	2	2				1	2	2		1	
COBOP2101.3	1		1	2	2				1	2	2		1	
COBOP2101.4	1		1	2	2				1	2	2		1	
COBOP2101.5	1		1	2	2				1	2	2		1	
Average	1		1	2	2				1	2	2		1	

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP2105: OPTOMETRIC INSTRUMENT

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP2105	4. L-T-P 2-0-2	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐			
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Refractive instruments Unit II: Ophthalmoscopes Unit III: Lensometer Unit IV: Keratometer Unit V: Fields of Vision			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30	Tutorials: 0	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2105.1	Identify the use of the Visual Acuity chart/drum, Retinoscope, Trail Box, Jackson Cross cylinder		
COBOP2105.2	Apply the procedures of Direct ophthalmoscope, Slit lamp Biomicroscope, Slit lamp Ophthalmoscopy (+90, 78 D), and Gonioscope		
COBOP2105.3	Apply the use of Applanation Tonometry, Keratometer, Perimeter, Electrodiagnostic instrument (ERG, VEP, EOG)		
COBOP2105.4	Formulate the technique and interpretation of A –Scan Ultrasound and Lensometer		
COBOP2105.5	Apply the principles of ocular diagnostics		
13. UNIT WISE DETAILS		No. of Units: 5	
Unit Number: 1 No. of Lectures: 5 Title: Refractive instruments			
Content Summary: Refractive instruments, Optotypes and MTF, Spatial Frequency, Test charts standards, Choice of test charts, Trail Box, Trial frame design, Near vision difficulties with units and trial frames, Retinoscope – types available, Adjustment of Retinoscopes- special features, Objective optometers, Infrared optometer devices, Projection charts, Illumination of the consulting room, Brightness acuity test, Vision analyzer, Pupilometer, Potential Acuity Meter, Aberrometer			
Unit Number: 2 No. of Lectures: 5 Title: Ophthalmoscopes			
Content Summary: Ophthalmoscopes and related devices, Design of ophthalmoscopes – illumination, Design of ophthalmoscopes- viewing, Ophthalmoscope disc, Filters for ophthalmoscopy, Indirect ophthalmoscope, fundus camera.			

Unit Number: 3 No. of Lectures: 4 Title: Lensometer			
Content Summary: Lensometer, Lens gauges or clock, Slit lamp, Tonometer, OCT (Optical coherence tomography), Visual Acuity chart/drum.			
Unit Number: 4 No. of Lectures: 5 Title: Keratometer			
Content Summary: Keratometer and corneal topography, Refractometer, Orthoptic Instruments (Synaptophore Only), Color Vision Testing Devices, JCC (Jackson Cross cylinder), A –Scan Ultrasound.			
Unit Number: 5 No. of Lectures: 5 Title: Fields of Vision			
Content Summary: Fields of Vision and Screening Devices, Scans, ERG, New Instruments			
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single			
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....4.....		1. Weak 2. Moderate ✓ 3. High	
b) SDG.....10.....		1. Weak ✓ 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): NA			
18. Books Recommended: • David Henson: Optometric Instrumentations, Butterworth- Heinemann, UK, 1991 • 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 HV Nema, Nitin Nema: Diagnostic Procedures in Ophthalmology, third edition. E-Book: Reference websites:			
19. E-Learning Resources			
NPTEL: Animated Lab Videos: MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered

1.	Unit I	Assignment, MSE, ETE	COBOP2105.1
2.	Unit II	Assignment, MSE, ETE	COBOP2105.2
3.	Unit III	Assignment, MSE, ETE	COBOP2105.3
4.	Unit IV	Assignment, MSE, ETE	COBOP2105.4
5.	Unit V	Assignment, MSE, ETE	COBOP2105.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
6.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
7.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
8.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%

External Evaluation (ETE)	50-70%	70-90%	>90%
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Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2105.1	2	1	2	2	2	2	2	1	2	2	3	2	2	1
COBOP2105.2	2	1	2	2	2	2	2	1	2	2	3	2	2	1
COBOP2105.3	2	1	2	2	2	2	2	1	2	2	3	2	2	1
COBOP2105.4	2	1	2	2	2	2	2	1	2	2	3	2	2	1
COBOP2105.5	2	1	2	2	2	2	2	1	2	2	3	2	2	1
Average	2	1	2	2	2	2	2	1	2	2	3	2	2	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP2110: OPTOMETRIC OPTICS-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP2110	4. L-T-P 2-0-2	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐			
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Ophthalmic Lens types Unit II: Spectacle Frames Unit III: Lens Ordering Unit IV: Lens verification Unit V: Progressive Addition Lens			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30		Tutorials: 0	Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2110.1	Measure unknown lens power, Transposition of various Rx of lenses		
COBOP2110.2	Identify different forms and designs of lenses (equiconvex, planoconvex, periscopic, meniscus) along with their surfacing process.		
COBOP2110.3	Perceive Knowledge of different types of materials used to make lenses and its characteristics		
COBOP2110.4	Apply Knowledge lens designs – single vision Lenses and Coatings		
COBOP2110.5	Formulate dispense of spectacles based on the patient's occupation		
13. UNIT WISE DETAILS			No. of Units: 5
Unit Number: 1 No. of Lectures: 6 Title: Ophthalmic Lens types			
Content Summary: Lens materials Properties of lenses (Refractive index, base curve, specific gravity, Abbe Value, UV cut off, etc.), Prism, Tints and coatings			
Unit Number: 2 No. of Lectures: 6 Title: Spectacle Frames			
Content Summary: Facial fitting principles, Spectacle delivery, Dispensing problem prescriptions, Frame types and parts, Classification of spectacle frames-material,			

weight, temple position, coloration Frame construction, Frame Measurements and markings, Frame manipulation and repair, Facial measurements and frame choice, Measuring the interpupillary distance and pupillometer, Special purpose frames (sports, kids, reading)	
Unit Number: 3 No. of Lectures: 6 Title: Lens Ordering	
Content Summary: Lens edge thickness calculation, Writing spectacle lens order, Facial measurements - Interpupillary distance measurement and measuring heights (single vision, multifocal, progressives), Measurement of effective diameter minimum blank size, Glazing and edging Hands on	
Unit Number: 4 No. of Lectures: 6 Title: Lens Verification	
Content Summary: 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, Optical centre marking, Axis marking, Surface power measurement using Geneva lens measure, Identify various types of Frames and mountings Project: Different brands for spectacle frames and sunglasses –Indian & international Demonstration- safety eyewear, different filters, recumbent spectacle, Ptois Spectacle	
Unit Number: 5 No. of Lectures: 6 Title: Progressive Addition Lens	
Content Summary: Brief idea about PAL, types, pros cons	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • Jalie MO: Ophthalmic lens and Dispensing, 3rd edition, Butterworth –Heinemann, 2008 • Troy E. Fannin, Theodore Grosvenor: Clinical Optics, 2nd edition, Butterworth – Heinemann, 1996 • C W Brooks, IM Borish: System for Ophthalmic Dispensing, 3rd edition, Butterworth - Heinemann, 2007 • Michael P Keating: Geometric, Physical & Visual Optics, 2nd edition, Butterworth – Heinemann, 2002 E-Book: Reference websites:	
19 E-Learning Resources	
NPTEL: Animated Lab Videos: MOOC Supplemented	
Participative Learning Component	

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP2110.1,
2.	Unit II	Assignment, MSE, ETE	COBOP2110.2
3.	Unit III	Assignment, MSE, ETE	COBOP2110.3,
4.	Unit IV	Assignment, MSE, ETE	COBOP2110.4
5.	Unit V	Assignment, MSE, ETE	COBOP2110.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION: (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%

Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2110.1	2		3	3	2	2	3	2	2	2	3	2	3	3
COBOP2110.2	2		3	3	2	2	3	2	2	2	3	2	3	3
COBOP2110.3	2		3	3	2	2	3	2	2	2	3	2	3	3
COBOP2110.4	2		3	3	2	2	3	2	2	2	3	2	3	3
COBOP2110.5	2	3	3	3	2	2	3	2	2	2	3	2	3	3
Average	2	0.6	3	3	2	2	3	2	2	2	3	2	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP2701: VISUAL OPTICS-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP2701	4. L-T-P 2-0-0	5. Credits 2	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus: Unit I: Review of Geometrical Optics Unit II: Optics of Ocular Structure Unit III: Measurements of Optical Constants of the Eye Unit IV: Refractive anomalies and their causes				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 30		Tutorials: 0		Practical's: 0
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2701.1	Label the fundamentals of optical components of the eye and the origin of refractive errors			
COBOP2701.2	Utilize the theoretical knowledge about measuring Visual acuity for distance, near and estimate it for all age groups.			
COBOP2701.3	Identify Refractive errors in patients who comes to get vision correction based on their signs and symptoms			
COBOP2701.4	To test the methods of Objective and subjective estimation of vision correction for different age groups			
COBOP2701.5	Apply practical skills on visual acuity measurement, objective and subjective clinical refraction for all age groups			
13. UNIT WISE DETAILS				No. of Units: 4
Unit Number: 1 No. of Lectures: 6 Title: Review of Geometrical Optics				
Content Summary: Vergence and power Conjugacy, object space and image space Sign convention Spherical refracting surface Spherical mirror; catoptric power Cardinal points Magnification Light and visual function Clinical Relevance of: Fluorescence, Interference, Diffraction, Polarization, Birefringence,				

Dichroism Aberration and application Spherical and Chromatic.	
Unit Number: 2 No. of Lectures: 6 Title: Optics of Ocular Structure	
Content Summary: Optics of Ocular Structure Cornea and aqueous Crystalline lens Vitreous Schematic and reduced eye	
Unit Number: 3 No. of Lectures: 6 Title: Measurements of Optical Constants of the Eye	
Content Summary: Measurements of Optical Constants of the Eye Corneal curvature and thickness Keratometry Curvature of the lens and ophthalmophakometry Axial and axis of the eye Basic Aspects of Vision Visual Acuity Light and Dark Adaptation Color Vision Spatial and Temporal Resolution Science of Measuring visual performance and application to Clinical Optometry	
Unit Number: 4 No. of Lectures: 6 Title: Refractive anomalies and their causes	
Content Summary: Refractive anomalies and their causes Etiology of refractive anomalies Contributing variability and their ranges Populating distributions of anomalies Optical component measurements Growth of the eye in relation to refractive errors	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	

18. Books Recommended: - A H Tunnacliffe: Visual optics, The Association of British Optician, 1987 - AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998 - M P Keating: Geometric, Physical and Visual optics, 2nd edition, Butterworth-Heinemann, USA, 2002 - HL Rubin: Optics for clinicians, 2nd edition, Triad publishing company. Florida, 1974. - H Obstfeld: Optic in Vision- Foundations of visual optics & associated computations, 2nd edition, Butterworth, UK, 1982. - WJ Benjamin: Borish's clinical refraction, 2nd edition, Butterworth Heinemann, Missouri, USA, 2006 - T Grosvenor: Primary Care Optometry, 4th edition, Butterworth –Heineman, USA, 2002 E-Book: Reference websites:			
19. E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP2701.1
2.	Unit II	Assignment, MSE, ETE	COBOP2701.2
3.	Unit III	Assignment, MSE, ETE	COBOP2701.3
4.	Unit IV	Assignment, MSE, ETE	COBOP2701.4, COBOP2701.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group): Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
 (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2701.1	1		1		1					1	3	1	1	1
COBOP2701.2	1		1		1					1	3	1	1	1
COBOP2701.3	1	1	2	2	2	2	2	2	2	2	3	2	2	1
COBOP2701.4	1	1	2	2	2	2	2	2	2	2	3	2	2	1
COBOP2701.5	1	1	2	2	2	2	2	2	2	2	3	2	2	1
Average	1	0.6	1.6	1.2	1.6	1.2	1.2	1.2	1.2	1.6	3	1.6	1.6	1

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP2704: OCULAR DISEASE-I

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: III		3. Course Code BOP2704	4. L-T-P 3-0-0	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus: Unit I: Orbit Unit II: Lids Unit III: Lacrimal System Unit IV: Conjunctiva Unit V: Cornea Unit VI: Uvea				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 30		Tutorials: 0		Practical's: 15
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2704.1	Perceive applied anatomy of various ocular diseases			
COBOP2704.2	Define the etiology & pathophysiology of various ocular diseases			
COBOP2704.3	Distinguish and describe the clinical features- signs, symptoms & complications of various ocular diseases.			
COBOP2704.4	Identify the differential diagnosis of conditions			
COBOP2704.5	Effectively plan the management (Diagnosis & treatment) outline of the ocular diseases through optometric perspective.			
13. UNIT WISE DETAILS		No. of Units: 6		
Unit Number: 1 No. of Lectures: 6 Title: Orbit				
Content Summary: Orbit, Applied Anatomy , Proptosis (Classification, Causes, Investigations), Enophthalmos, Developmental Anomalies (craniosynostosis, Craniofacial Dysostosis, Hypertelorism, Median facial cleft syndrome), Orbital Inflammations (Preseptal cellulites, Orbital cellulitis Orbital Periostitis, cavernous sinus Thrombosis), Grave's Ophthalmopathy, Orbital tumours(Dermoid, capillary haemangioma, Optic nerve glioma), Orbital blowout fractures, Orbital surgery (Orbitotomy), Orbital tumours , Orbital trauma, Approach to a patient with proptosis				
Unit Number: 2 No. of Lectures: 5 Title: Lids				
Content Summary:				

Lids, Applied Anatomy, Congenital anomalies (Ptosis, Coloboma, Epicanthus, Distichiasis, Cryptophthalmos), Oedema of the eyelids (Inflammatory, Solid, Passive oedema), Inflammatory disorders (Blepharitis, External Hordeolum, Chalazion, Internal hordeolum, Molluscum Contagiosum), Anomalies in the position of the lashes and Lid Margin (Trichiasis, Ectropion, Entropion, Symblepharon, Blepharophimosis, Lagophthalmos, Blepharospasm, Ptosis), Tumours (Papilloma's, Xanthelasma, Haemangioma, Basal carcinoma, Squamous cell carcinoma, sebaceous gland melanoma)	
Unit Number: 3 No. of Lectures: 4 Title: Lacrimal System	
Content Summary: Lacrimal System, Applied Anatomy, Tear Film, The Dry Eye (Sjogren's Syndrome), The watering eye (Aetiology, clinical evaluation), Dacryocystitis, Swelling of the Lacrimal gland (Dacryoadenitis)	
Unit Number: 4 No. of Lectures: 5 Title: Conjunctiva	
Content Summary: Conjunctiva, Applied Anatomy, Inflammations of conjunctiva (Infective conjunctivitis – bacterial, chlamydial, viral, Allergic conjunctivitis, Granulomatous conjunctivitis), Degenerative conditions (Pinguecula, Pterygium, Concretions), Symptomatic conditions (Hyperaemia, Chemosis, Ecchymosis, Xerosis, Discoloration), Cysts and Tumours.	
Unit Number: 5 No. of Lectures: 9 Title: Cornea	
Content Summary: Cornea, Applied Anatomy and Physiology, Congenital Anomalies (Megalocornea, Microcornea, Cornea plana, Congenital cloudy cornea), Inflammations of the cornea (Topographical classifications: Ulcerative keratitis and Non ulcerative, Etiological classifications: Infective, Allergic, Trophic, Traumatic, Idiopathic), Degenerations (classifications, Arcussenilis, Vogt's white limbal girdle, Hassal-henle bodies, Lipoid Keratopathy, Band shaped keratopathy, Salzmann's nodular degeneration, Droplet keratopathy, Pellucid Marginal degeneration), Dystrophies (Reis Buckler dystrophy, Recurrent corneal erosion syndrome, Granular dystrophy, Lattice dystrophy, Macular dystrophy, cornea guttata, Fuchs's epithelial endothelial dystrophy, Congenital hereditary endothelial dystrophy), Keratoconus, Keratoglobus, Corneal oedema, Corneal opacity, Corneal vascularisation, Penetrating Keratoplasty.	
Unit Number: 6 No. of Lectures: 6 Title: Uvea	
Content Summary: Uveal Tract and Sclera, Applied Anatomy, Classification of uveitis, Aetiology, Pathology, Anterior Uveitis, Posterior Uveitis, Purulent Uveitis, Endophthalmitis, Pan ophthalmitis, Pars Planitis, Tumours of uveal tract (Melanoma), Episcleritis and scleritis, Clinical examination of Uveitis and Scleritis	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • A K Khurana: Comprehensive Ophthalmology, 4th edition, new age international (p) Ltd. Publishers, New Delhi, 2007 • Stephen J. Miller: Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990 • Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth - Heinemann, 2007	

E-Book:			
Reference websites:			
19. E-Learning Resources			
NPTEL:			
Animated Lab Videos:			
MOOC Supplemented			
Participative Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP2704.1
2.	Unit II	Assignment, MSE, ETE	COBOP2704.2
3.	Unit III	Assignment, MSE, ETE	COBOP2704.3
4.	Unit IV	Assignment, MSE, ETE	COBOP2704.3
5.	Unit V	Assignment, MSE, ETE	COBOP2704.4
6.	Unit VI	Assignment, MSE, ETE	COBOP2704.5

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
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Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2704.1	3	2	3	3	3	3	3	3	3	3	3	3	3	2
COBOP2704.2	3	2	3	3	3	3	3	3	3	3	3	3	3	2
COBOP2704.3	3	2	3	3	3	3	3	3	3	3	3	3	3	2
COBOP2704.4	3	2	3	3	3	3	3	3	3	3	3	3	3	2
COBOP2704.5	3	2	3	3	3	3	3	3	3	3	3	3	3	2
Average	3	2	3	3	3	3	3	3	3	3	3	3	3	2

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP 2503: CLINICAL OPTOMETRY-II AND SUMMER TRAINING EVALUATION-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP 2503	4. L-T-P 0-0-8	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) BOP1502 Clinical Optometry I			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability ☒ Entrepreneurship Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Practical: Students will continue their observationship in the Indira Gandhi Eye Hosiptal and Research Center, Gurgaon. In addition to concepts learnt in Clinical Optometry -II in the previous semester, students will also learn to present clinical cases. Case Presentation •Overview of patient history-taking and case presentation •Understanding of the importance of accurate and clear case presentation •Practice with case presentation skills			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: Nil		Tutorials: Nil	Practical's: 120 hrs
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2503.1	Test for objective, and subjective refraction and interpret the results		
COBOP2503.2	Analyze condition using Torch Light Examination (TLE) of the eye, pupillary evaluation, and photo stress test and interpret the results		
COBOP2503.3	Test for Slit lamp bio-microscopy for evaluating the integrity of the anterior segment of the eye, Intra-Ocular Pressure, and document the findings		
COBOP2503.4	Perform tests to assess the tear function and lacrimal system		
COBOP2503.5	Test using direct and indirect ophthalmoscopy for evaluating the posterior segment of the eye and document the findings		
13. UNIT WISE DETAILS		No. of Units: 01	
Unit I Content Summary			

Practical: Students will continue their observationship in the Indira Gandhi Eye Hosiptal and Research Center, Gurgaon. In addition to concepts learnt in Clinical Optometry -II in the previous semester, students will also learn to present clinical cases. Case Presentation •Overview of patient history-taking and case presentation •Understanding of the importance of accurate and clear case presentation •Practice with case presentation skills															
14. Instructions for students - Before coming in the class please read about clinical procedures - All students should be able to know the clinical skills learnt in previous semesters - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.															
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA															
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)													
a) SDG: 3		1. Weak 2. Moderate 3. High ✓													
b) SDG: NA		1. Weak 2. Moderate 3. High													
17. Title of Lab Manual (if applicable): Not applicable															
18. Books Recommended: E-Book: NA Reference websites: NA															
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA															
Experiential Learning Component <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 40%;">Topic</th> <th style="width: 30%;">Submissions/Assessment</th> <th style="width: 20%;">COs covered</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Clinical Optometry</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP2503.1, COBOP2503.2, COBOP2503.3, COBOP2503.4, COBOP2503.5</td> </tr> </tbody> </table>				Sr. No.	Topic	Submissions/Assessment	COs covered	1.	Clinical Optometry	MSE, ESE and Continuous Evaluation	COBOP2503.1, COBOP2503.2, COBOP2503.3, COBOP2503.4, COBOP2503.5				
Sr. No.	Topic	Submissions/Assessment	COs covered												
1.	Clinical Optometry	MSE, ESE and Continuous Evaluation	COBOP2503.1, COBOP2503.2, COBOP2503.3, COBOP2503.4, COBOP2503.5												
Activities for Differential learning Needs <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 20%;">Learning Level</th> <th style="width: 40%;">Activities</th> <th style="width: 30%;">Assessment</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td>Slow learners</td> <td>Extra classes, assignment, one to one interaction, guest lectures</td> <td>Assignment, MSE, Test, viva</td> </tr> <tr> <td style="text-align: center;">2.</td> <td>Intermediate learners</td> <td>Skill training, Journal club activities, guest lectures</td> <td>Test, feedback, viva</td> </tr> </tbody> </table>				Sr. No.	Learning Level	Activities	Assessment	1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva	2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
Sr. No.	Learning Level	Activities	Assessment												
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva												
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva												

3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks
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Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical (0-0-8)	Regular Practical/Practice & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Presentation Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2503.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2503.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2503.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2503.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2503.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP2504: INDIAN MEDICINE & TELEMEDICINE (CERTIFICATE COURSE)

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code BOP2504	4. L-T-P 0-0-4	5. Credits 2
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name)			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: Unit I: Introduction to healthcare delivery system Unit II: National Health Programme Unit III: Ayush Unit IV: Health Senario India Unit V: Epidemiology			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: Nil	Tutorials: 0	Practical's: 60	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2504.1	Define the traditional and the latest healthcare system		
COBOP2504.2	Utilize telemedicine practices in India especially in eye care industry.		
COBOP2504.3	Understand Ayurveda system of medication		
13. UNIT WISE DETAILS		No. of Units: 5	
Unit Number: 1 No. of Lectures: 6 Title: Introduction to healthcare delivery system			
Content Summary: 1. Introduction to healthcare delivery system 1.1 Healthcare delivery system in India at primary, secondary and tertiary care 1.2 Community participation in healthcare delivery system 1.3 Health system in developed countries. 1.4 Private Sector 1.5 National Health Mission 1.6 National Health Policy 1.7 Issues in Health Care Delivery System in India			
Unit Number: 2 No. of Lectures: 6 Title: National Health Programme			
Content Summary: National Health Programme-Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme			
Unit Number: 3 No. of Lectures: 6 Title: AYUSH			

Content Summary: Introduction to AYUSH system of medicine 3.1 Introduction to Ayurveda. 3.2 Yoga and Naturopathy 3.3 Unani 3.4 Siddha 3.5 Homeopathy 3.6 Need for integration of various system of medicine	
Unit Number: 4 No. of Lectures: 6 Title: Health Scenario India	
Content Summary: Health scenario of India- past, present and future 4. Demography & Vital Statistics 4.1 Demography – its concept 4.2 Vital events of life & its impact on demography 4.3 Significance and recording of vital statistics 4.4 Census & its impact on health policy	
Unit Number: 5 No. of Lectures: 6 Title: Epidemiology	
Epidemiology 5.1 Principles of Epidemiology 5.2 Natural History of disease 5.3 Methods of Epidemiological studies 5.4 Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.	
14. Instructions for students • Before coming to the class please read about the topic • After every class, students go through the reading/reference material shared with them • After completing every topic, a quiz will be taken in class • Students must come to class on time • All students have to make class notes and participate in class discussion • All student must secure at least 50% marks in each evaluation component • All students must maintain the attendance at least 80% • All student must submit a project either in group or single	
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....4.....	1. Weak 2. Moderate ✓ 3. High
b) SDG.....10.....	1. Weak ✓ 2. Moderate 3. High
17. Title of Lab Manual (if applicable): NA	
18. Books Recommended: • A H Tunnacliffe: Visual optics, The Association of British Optician, 1987 • AG Bennett & RB Rabbets: Clinical Visual optics, 3rd edition, Butterworth Heinemann, 1998 • M P Keating: Geometric, Physical and Visual optics, 2nd edition, Butterworth-Heinemann, USA, 2002 • HL Rubin: Optics for clinicians, 2nd edition, Triad publishing company. Florida, 1974. • H Obstfeld: Optic in Vision- Foundations of visual optics & associated computations, 2nd edition, Butterworth, UK, 1982. • WJ Benjamin: Borish's clinical refraction, 2nd edition, Butterworth Heinemann, Missouri, USA, 2006 • T Grosvenor: Primary Care Optometry, 4th edition, Butterworth –Heinemann, USA, 2002 E-Book: Reference websites:	
19 E-Learning Resources NPTEL: Animated Lab Videos: MOOC Supplemented: https://doctorguru.com/register-TPG-course.asp	
Participative Learning Component	

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	Assignment, MSE, ETE	COBOP2504.1
2.	Unit II	Assignment, MSE, ETE	COBOP2504.2
3.	Unit III	Assignment, MSE, ETE	COBOP2504.3
4.	Unit IV	Assignment, MSE, ETE	COBOP2504.2
5.	Unit V	Assignment, MSE, ETE	COBOP2504.2

Value Added Experiments: NA

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, Viva
2.	Intermediate learners	Skill training, guest lectures, case studies	Test, feedback, Viva
3.	Advanced Learners	VAC courses, skill training, Research Papers reading	Presentation, Viva, feedbacks

Project (To be done as individual/in group):

Understand the application of the economic theories to the real world conditions through your own framed examples.

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical (0-0-4)	Regular Practical/Practice & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Presentation Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Understanding methods and theories of microeconomics	Able to analyze the Issue of theories of microeconomics	analytical skills and ability to solve problems
Research Papers	Basic overview	Able to summarize the findings	Understand and able to explain the Objectives Methodology and Findings
Project	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
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COBOP2504.1	1		1		1					1	3	1	1	1
COBOP2504.2	1		1		1					1	3	1	1	1
COBOP2504.3	1	1	2	2	2	2	2	2	2	2	3	2	2	1
Average	1	0.6	1.6	1.2	1.6	1.2	1.2	1.2	1.2	1.6	3	1.6	1.6	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

IP2001: INTERDISCIPLINARY PROJECT

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: III	3. Course Code IP2001	4. L-T-P 2-0-2	5. Credits 3
6. Type of Course (Tick one):	Programme Core Programme Elective Open Elective ☒ VAC		
7. Prerequisite(s), if any (Mention course code and name) NA			
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester			
9. Focus: Employability Entrepreneurship ☒ Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: - The objective of this course is to develop a student's knowledge of and appreciation for the Interdisciplinary nature of knowledge and learning - Importance and value of integrating knowledge and perspectives from multiple disciplines as a means to evaluating and understanding complex topics, problems, issues, phenomena, and events - Competencies learned during the educational process and to apply these competencies in a real-world application			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 12		Tutorials:	Practical's: 12 hrs
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2001.1	Acquire, analyze and evaluate data to create, organize and document information (evaluation through report)		
COBOP2001.2	Function effectively and ethically as individual and team member or leader – (evaluation through peer evaluation and plagiarism check)		
COBOP2001.3	Demonstrate skills of learning how to learn (evaluation through the lifelong learning rubric)		
COBOP2001.4	Demonstrate effective oral and written communication skills (evaluation through the report and presentation)		
COBOP2001.5	Understanding of project management in multi-disciplinary environment (evaluation through minutes of meeting of all group meetings and final presentation)		
13. UNIT WISE DETAILS		No. of Units: NA	
14. Instructions for students - Before coming in the class please read about clinical procedures - All students should be able to know the clinical skills learnt in previous semesters - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%.			

All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate ✓ 3. High	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Project	MSE, ESE and Continuous Evaluation	COIPT2001.1, IPT2001.2, IPT2001.3, IPT2001.4, IPT2001.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (0-2-2)	Mid Semester Examination	50	Must Secure at Least 50% Marks in Total.
		End Semester Examination	50	

RUBRIC FOR EVALUATION:

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COIPT2001.1	1		1	3	1					3	3	1	1	3
COIPT2001.2	1		1	3	1					3	3	1	1	3
COIPT2001.3	1	1	2	3	2	2	2	2	2	3	3	2	2	3
COIPT2001.4	1	1	2	3	2	2	2	2	2	3	3	2	2	3
COIPT2001.5	1	1	2	3	2	2	2	2	2	3	3	2	2	3
Average	1	0.6	1.6	3	1.6	1.2	1.2	1.2	1.2	3	3	1.6	1.6	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

Semester IV

BOP 2106: BASIC AND OCULAR PHARMACOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP 2106	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name) NA			
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐			
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☐			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies	
11. Brief Syllabus: Unit-I: GENERAL PHARMACOLOGY - Introduction and sources of drugs, Routes of drug administration, Pharmacokinetics-special emphasis on ocular pharmacokinetics, Pharmacokinetics, Adverse drug reactions-Special emphasis on ocular toxicity of drugs, Factors modifying drug action Unit-II SYSTEMIC PHARMACOLOGY - Autonomic Nervous System -Introduction. Neurotransmitters, Their Mechanism of Action Drugs Affecting- - Pupillary Size and Light Reflex - Intraocular Tension - Accommodation - Skeletal Muscle Relaxants. Cardiovascular System- Antihypertensives and Drugs useful In Angina. Central Nervous System -Alcohol. Sedative Hypnotics, General Anaesthetics, local anaesthetics, Opioids and non-opioids. Unit-III Chemotherapy - Introduction, general chemotherapy. Specific chemotherapy -Antifungal -Antiviral -Antitubercular -Antileprotic. Hormones- Corticosteroids, Antidiabetics. Blood Coagulants. Diuretics. Unit-IV OCULAR PHARMACOLOGY - Ocular preparations, formulations and requirements of an ideal agents, Ocular Pharmacokinetics-Methods of drug administration, Special drug delivery systems, Ocular toxicology Unit-V DIAGNOSTIC AND THERAPUTIC APPLICATIONS OF DRUGS IN OPHTHALMOLOGY Agents used to aid diagnosis, Drugs and biological agents used in ocular surgery, Anaesthetics used in ophthalmic procedures, Drug treatment of glaucoma, accommodative esotropia and ocular myasthenia, Pharmacotherapy of ocular infections-Bacterial, Viral, Fungal, Chlamydial. Drugs used in inflammatory disorders of the eye, Drugs used in inflammatory disorders of the eye., Drug treatment of degenerative disorders of the eye, Immunomodulators in ophthalmic practice, use of other agents in ophthalmic practice, Use of other agents in ophthalmic practice -Enzymes -Vitamins -Trace elements -Antioxidants - Wetting agents - Tear substitutes			

Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 45	Tutorials: Nil	Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP2106.1	Classify the various structures of drugs and their mechanism of actions.	
COBOP2106.2	List the various indications and contraindications of various categories of the drugs.	
COBOP2106.3	Distinguish the various ophthalmic medications regarding their pharmacodynamics, pharmacokinetics routes of administration, generic, brand names etc.	
COBOP2106.4	Apply the knowledge of various drugs to clinical aspect of diseases	
COBOP2106.5	Understand drug dosage and adverse effects.	
13. UNIT WISE DETAILS		No. of Units: 05
Unit Number: 1 No. of Lectures: 8 Title: GENERAL PHARMACOLOGY		
Content Summary: -Introduction and sources of drugs, Routes of drug administration, Pharmacokinetics-special emphasis on ocular pharmacokinetics, Pharmacokinetics, Adverse drug reactions-Special emphasis on ocular toxicity of drugs, Factors modifying drug action		
Unit Number: 2 No. of Lectures: 10 Title: SYSTEMIC PHARMACOLOGY		
Content Summary: Autonomic Nervous System -Introduction. Neurotransmitters, Their Mechanism of Action Drugs Affecting- - Pupillary Size and Light Reflex - Intraocular Tension - Accommodation - Skeletal Muscle Relaxants. Cardiovascular System- Antihypertensives and Drugs useful In Angina. Central Nervous System -Alcohol. Sedative Hypnotics, General Anaesthetics, local anaesthetics, Opioids and non-opioids.		
Unit Number: 3 No. of Lectures: 10 Title: INTRODUCTION, GENERAL CHEMOTHERAPY.		
Content Summary: Introduction, general chemotherapy. Specific chemotherapy -Antifungal -Antiviral -Antitubercular -Antileprotic. Hormones- Corticosteroids, Antidiabetics. Blood Coagulants. Diuretics.		
Unit Number: 4 No. of Lectures: 10 Title: OCULAR PHARMACOLOGY		
Content Summary: Ocular preparations, formulations and requirements of an ideal agents, Ocular Pharmacokinetics-Methods of drug administration, Special drug delivery systems, Ocular toxicology		
Unit Number: 5 No. of Lectures: 10 Title: DIAGNOSTIC AND THERAPUTIC APPLICATIONS OF DRUGS IN OPHTHALMOLOGY		
Content Summary: Agents used to aid diagnosis, Drugs and biological agents used in ocular surgery, Anaesthetics used in ophthalmic procedures, Drug treatment of glaucoma, accommodative esotropia and ocular myasthenia, Pharmacotherapy of ocular infections-Bacterial, Viral, Fungal, Chlamydial. Drugs used in inflammatory disorders of the eye, Drugs used in inflammatory disorders of the eye., Drug treatment of degenerative disorders of the eye, Immunomodulators in ophthalmic practice, use of other agents in ophthalmic practice, Use of other agents in ophthalmic practice - Enzymes -Vitamins -Trace elements -Antioxidants - Wetting agents - Tear substitutes.		
Practical • Preparation of lubricant eye drop. • Preparation of antibiotic eye ointment. • How to check osmolarity and pH of eye drops. • Preparation of contact lens solution. • Evaluation of miotic and mydriatic effects		
14. Instructions for students • Before coming in the class please read about general pharmacology. • All students should be able to know the anatomy and physiology of the eye		

- All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate ✓ 3. High	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: - K D Tripathi: Essentials of Medical Pharmacology. 5th edition, Jaypee, New Delhi, 2004 - Ashok Garg: Manual of Ocular Therapeutics, Jaypee, New Delhi, 1996 - T J Zimmerman, K S Konner: Text Book of Ocular Pharmacology, Lippincott-Raven, 1997 E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	GENERAL PHARMACOLOGY	MSE, ESE and Continuous Evaluation	COBOP2106.1
2.	SYSTEMIC PHARMACOLOGY	MSE, ESE and Continuous Evaluation	COBOP2106.2
3.	Introduction, general chemotherapy	MSE, ESE and Continuous Evaluation	COBOP2106.3
4.	OCULAR PHARMACOLOGY	MSE, ESE and Continuous Evaluation	COBOP2106.4
5.	DIAGNOSTIC AND THERAPUTIC APPLICATIONS OF DRUGS IN OPHTHALMOLOGY	MSE, ESE and Continuous Evaluation	COBOP2106.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2106.1	2	2	3	2	3	2	3	2	3	2	3	2	2	1
COBOP2106.2	2	2	3	2	3	2	3	2	3	2	3	2	2	1
COBOP2106.3	2	2	3	2	3	2	3	2	3	2	3	2	2	1
COBOP2106.4	2	2	3	2	3	2	3	2	3	2	3	2	2	1
COBOP2106.5	2	2	3	2	3	2	3	2	3	2	3	2	2	1
Average	2	2	3	2	3	2	3	2	3	2	3	2	2	1

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

BOP 2107: OPTOMETRIC OPTICS II AND DISPENSING OPTICS

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP 2107	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) BOP 2702 Optometric Optics I			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: Unit-I: •Overview of the course and the importance of ophthalmic dispensing in optometry •Overview of the different types of ophthalmic lenses and frames available •Basic principles of lens design and material properties Unit-II •Techniques for measuring the patient's pupillary distance, vertex distance and other parameters •Overview of the fitting process and the selection of the appropriate frame and lens •Hands-on practice with measuring and fitting ophthalmic lenses and frames in a workshop by experts in the field. Unit-III •Overview of the different types of lenses, including single vision, multifocal, and progressive lenses •Understanding of lens materials, coatings, and treatments •Hands-on practice with lens fabrication and edging Unit-IV Overview of specialty lenses, including polarized lenses, safety lenses, and high-index lenses •Understanding of the applications and indications for specialty lenses •Hands-on practice with fitting and dispensing specialty lenses Unit-V •Overview of patient communication and professionalism in ophthalmic dispensing •Understanding of the importance of providing accurate and clear information to patients •Practice with patient communication and professionalism Unit - VI •Review of key concepts and skills covered in the course			

•Self-assessment and evaluation of dispensing skills •Feedback and guidance for improvement		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 45	Tutorials: Nil	Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP2107.1	Measure unknown lens power, Transposition of various Rx of lenses	
COBOP2107.2	Identify different forms and designs of lenses (equiconvex, planoconvex, periscopic, meniscus) along with their surfacing process.	
COBOP2107.3	Identify spectacle frames –manufacture process & materials, Art and science of dispensing spectacle lens and frames based on the glass prescription.	
COBOP2107.4	Perceive knowledge of different types of materials used to make lenses and its characteristics	
COBOP2107.5	Formulate dispense of spectacles based on the patient's occupation	
13. UNIT WISE DETAILS		No. of Units: 06
Unit Number: 1	No. of Lectures: 8	Title: Introduction to Ophthalmic Dispensing
Content Summary: Overview of the course and the importance of ophthalmic dispensing in optometry •Overview of the different types of ophthalmic lenses and frames available •Basic principles of lens design and material properties		
Unit Number: 2	No. of Lectures: 8	Title: Measurements and Fittings
Content Summary: Techniques for measuring the patient's pupillary distance, vertex distance and other parameters •Overview of the fitting process and the selection of the appropriate frame and lens •Hands-on practice with measuring and fitting ophthalmic lenses and frames in a workshop by experts in the field.		
Unit Number: 3	No. of Lectures: 8	Title: Lenses and Coatings
Content Summary: Overview of the different types of lenses, including single vision, multifocal, and progressive lenses •Understanding of lens materials, coatings, and treatments •Hands-on practice with lens fabrication and edging		
Unit Number: 4	No. of Lectures: 8	Title: Specialty Lenses and Applications
Content Summary: Overview of specialty lenses, including polarized lenses, safety lenses, and high-index lenses •Understanding of the applications and indications for specialty lenses •Hands-on practice with fitting and dispensing specialty lenses		
Unit Number: 5	No. of Lectures: 8	Title: Patient Communication and Professionalism
Content Summary: Overview of patient communication and professionalism in ophthalmic dispensing •Understanding of the importance of providing accurate and clear information to patients •Practice with patient communication and professionalism		
Unit Number: 6	No. of Lectures: 8	Title: Review and Evaluation
Content Summary: Review of key concepts and skills covered in the course •Self-assessment and evaluation of dispensing skills		

•Feedback and guidance for improvement							
Practical - Hand neutralisation method of lens. - How to measure IPD And PD. - How to check an ideal frame fitting (four-point touch) - How to mark centration in frame and lenses. - How to check the final fitting of lens in frame. - Marking of bifocal lenses - Markings of a progressive lenses. - Prism marking technique - Fitting of lens to frame.							
14. Instructions for students - Before coming in the class please read about general pharmacology. - All students should be able to know the anatomy and physiology of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.							
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA							
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)					
a) SDG: 3		1. Weak 2. Moderate ✓ 3. High					
b) SDG: NA		1. Weak 2. Moderate 3. High					
17. Title of Lab Manual (if applicable): Not applicable							
18. Books Recommended: Reference Books: Dispensing Optics 2nd Ed." by Ajit Kumar Bhootra. JP Brothers Medical Publishers. E-Book: NA Reference websites: NA							
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA							
Experiential Learning Component <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 40%;">Topic</th> <th style="width: 30%;">Submissions/Assessment</th> <th style="width: 20%;">COs covered</th> </tr> </table>				Sr. No.	Topic	Submissions/Assessment	COs covered
Sr. No.	Topic	Submissions/Assessment	COs covered				

1.	Introduction to Ophthalmic Dispensing	MSE, ESE and Continuous Evaluation	COBOP2107.1
2.	Measurements and Fittings	MSE, ESE and Continuous Evaluation	COBOP2107.2
3.	Lenses and Coatings	MSE, ESE and Continuous Evaluation	COBOP2107.2
4.	Specialty Lenses and Applications	MSE, ESE and Continuous Evaluation	COBOP2107.3
5.	Patient Communication and Professionalism	MSE, ESE and Continuous Evaluation	COBOP2107.4
6.	Review and Evaluation	MSE, ESE and Continuous Evaluation	COBOP2107.5

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2107.1	3	2	3	2	2	3	3	2	2	3	3	2	3	2
COBOP2107.2	3	2	3	2	2	3	3	2	2	3	3	2	3	2
COBOP2107.3	3	2	3	2	2	3	3	2	2	3	3	2	3	2
COBOP2107.4	3	2	3	2	2	3	3	2	2	3	3	2	3	2
COBOP2107.5	3	2	3	2	2	3	3	2	2	3	3	2	3	2
Average	3	2	3	2	2	3	3	2	2	3	3	2	3	2

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP 2717: OCULAR DISEASES II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP 2717	4. L-T-P 3-0-0	5. Credits 3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) BOP 2103 Ocular Diseases I				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Retina and Vitreous: Applied Anatomy, Congenital and Developmental Disorders (Optic Disc: Coloboma, Drusen, Hypoplasia, Medullated nerve fibers; Persistent Hyaloid Artery), 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), 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 Unit-II Ocular Injuries: Terminology: Closed globe injury (contusion, lamellar laceration) Open globe injury (rupture, laceration, penetrating injury, perforating injury), Mechanical injuries (Extra ocular foreign body, blunt trauma, perforating injury, sympathetic ophthalmitis), Non-Mechanical Injuries (Chemical injuries, Thermal, Electrical, Radiational), Clinical approach towards ocular injury patients Unit-III Lens: Applied Anatomy and Physiology, Clinical examination, Classification of cataract, Congenital and Developmental cataract, Acquired (Senile, Traumatic, Complicated, Metabolic, Electric, Radiation, Toxic), Morphological: Capsular, Subcapsular, Cortical, Supranuclear, Nuclear, Polar. Management of cataract (non-surgical and surgical measures; preoperative evaluation, Types of surgeries,), Complications of cataract surgery, Displacement of lens: Subluxation, Displacement, Lens coloboma, Lenticonus, Microcornea. Unit-IV Clinical Neuro-ophthalmology: 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), Optic neuritis, Anterior Ischemic optic neuropathy, Papilledema, optic atrophy, Cortical blindness, Malingering, Nystagmus, Clinical examination Unit-V Glaucoma: Applied anatomy and physiology of anterior segment, Clinical Examination, Definitions and classification of glaucoma, Pathogenesis				

of glaucomatous ocular damage, Congenital glaucoma's, Primary open angle glaucoma, Ocular hypertension, Normal Tension Glaucoma, Primary angle closure glaucoma (Primary angle closure suspect, intermittent glaucoma, acute congestive, chronic angle closure), Secondary Glaucoma's Management: common medications, laser intervention and surgical techniques.		
Practical:		
Retina and Vitreous:		
Clinical identification of retinal diseases.		
BRAO		
CRAO		
DME		
Pathological myopia		
Hypertensive retinopathy		
Diabetic retinopathy		
Ocular injury		
Identification of ocular injury.		
Emergency treatment in open and close globe injury.		
Lens		
Clinical identification of cataract		
Clinical identification of lens abnormality.		
Optic disc		
How to check for RAPD (pupillary reflex test)		
Clinical identification of optic disc disorder.		
Glaucoma		
Measurement of anterior chamber angle (open angle and close angle)		
Clinical identification of different types of glaucoma.		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 45	Tutorials: Nil	Practical's: 30
12. Course Outcomes (COs)		
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP2717.1	Recall the applied anatomy of various ocular diseases	
COBOP2717.2	List the etiology & pathophysiology of various ocular diseases	
COBOP2717.3	Distinguish and describe the clinical features- signs, symptoms & complications of various ocular diseases.	
COBOP2717.4	Plan the management (Diagnosis & treatment) outline of the ocular diseases through optometric perspective.	
COBOP2717.5	Plan comanagement of ocular diseases with other eye care professionals.	
13. UNIT WISE DETAILS		No. of Units: 05
Unit Number: 1	No. of Lectures: 10	Title: Retina and Vitreous
Content Summary:		
Applied Anatomy, Congenital and Developmental Disorders (Optic Disc: Coloboma, Drusen, Hypoplasia, Medullated nerve fibers; Persistent Hyaloid Artery), 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), 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		
Unit Number: 2	No. of Lectures: 8	Title: Ocular Injuries:
Content Summary:		
Terminology: Closed globe injury (contusion, lamellar laceration) Open globe injury (rupture, laceration, penetrating injury, perforating injury),		

Mechanical injuries (Extra ocular foreign body, blunt trauma, perforating injury, sympathetic ophthalmitis), Non-Mechanical Injuries (Chemical injuries, Thermal, Electrical, Radiational), Clinical approach towards ocular injury patients	
Unit Number: 3 No. of Lectures: 8 Title: Lens	
Content Summary: Applied Anatomy and Physiology, Clinical examination, Classification of cataract, Congenital and Developmental cataract, Acquired (Senile, Traumatic, Complicated, Metabolic, Electric, Radiation, Toxic), Morphological: Capsular, Subcapsular, Cortical, Supranuclear, Nuclear, Polar. Management of cataract (non-surgical and surgical measures; preoperative evaluation, Types of surgeries,), Complications of cataract surgery, Displacement of lens: Subluxation, Displacement, Lens coloboma, Lenticonus,	
Unit Number: 4 No. of Lectures: 8 Title: Clinical Neuro-ophthalmology	
Content Summary: 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), Optic neuritis, Anterior Ischemic optic neuropathy, Papilledema, optic atrophy, Cortical blindness, Malingering, Nystagmus, Clinical examination	
Unit Number: 5 No. of Lectures: 8 Title: Glaucoma	
Content Summary: Applied anatomy and physiology of anterior segment, Clinical Examination, Definitions and classification of glaucoma, Pathogenesis of glaucomatous ocular damage, Congenital glaucoma's, Primary open angle glaucoma, Ocular hypertension, Normal Tension Glaucoma, Primary angle closure glaucoma (Primary angle closure suspect, intermittent glaucoma, acute congestive, chronic angle closure), Secondary Glaucoma's Management: common medications, laser intervention and surgical techniques.	
14. Instructions for students • Before coming in the class please read about ocular diseases of the anterior segment. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate ✓ 3. High
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended: Reference Books: A K Khurana: Comprehensive Ophthalmology, 4th edition, new age international (p) Ltd. Publishers, New Delhi,	

Stephen J. Miller: Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990 Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth-Heinemann, 2007 E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Retina and Vitreous	MSE, ESE and Continuous Evaluation	COBOP2717.1
2.	Ocular Injuries	MSE, ESE and Continuous Evaluation	COBOP2717.2
3.	Lens	MSE, ESE and Continuous Evaluation	COBOP2717.3
4.	Clinical Neuro-ophthalmology	MSE, ESE and Continuous Evaluation	COBOP2717.4
5.	Glaucoma	MSE, ESE and Continuous Evaluation	COBOP2717.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2717.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2717.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2717.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2717.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2717.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 2109: VISUAL OPTICS II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 2109	2-0-2	3	
Semester: IV				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
BOP 2701 Visual Optics I				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
Unit-I: Accommodation & Presbyopia: Far and near point of accommodation, Range and amplitude of accommodation, Mechanism of accommodation, Variation of accommodation with age, Anomalies of accommodation, Presbyopia, Hypermetropia and accommodation. Convergence: Type, Measurement and Anomalies, Relationship between accommodation and convergence-AC/A ratio Unit-II Objective Refraction (Static & Dynamic) Streak radiology, Principle, Procedure, Difficulties and interpretation of findings, Transposition and spherical equivalent, Dynamic retinoscopy various methods, Radical retinoscopy and near radiology, Cycloplegic refraction. Unit-III Subjective Refraction: Principle and fogging, fixed astigmatic dial (Clock dial), Combination of fixed and rotator dial (Fan and block test), J.C.C, Duo chrome test o Binocular balancing- alternate occlusion, prism dissociation, dissociate Duo chrome balance, Borish dissociated fogging o Binocular Refraction-Various techniques. Unit-IV Effective Power & Magnification: Ocular refraction vs. Spectacle refraction, Spectacle magnification vs. Relative spectacle magnification, Axial vs. Refractive ametropia, Knapp's law, Ocular accommodation vs. Spectacle accommodation, Retinal image blur-Depth of focus and depth of field Practical: •How to measure Near and far point of accommodation. •Practical of different type of retinoscopy. •Fogging •JCC •Deucrome •Binocular balancing				

Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 30	Tutorials: Nil	Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP2109.1	Build theoretical knowledge and practical skill on visual acuity measurement, objective and subjective clinical refraction.	
COBOP2109.2	Determine Refractive errors in patients who comes to get vision correction based on their signs and symptoms	
COBOP2109.3	Demonstrate the methods of Objective and subjective estimation of vision correction for different age groups	
COBOP2109.4	Assess visual acuity measurement, objective and subjective clinical refraction for all age groups	
COBOP2109.5	Estimate the near vision addition required for a presbyopic patient as per the age and condition which should decrease his asthenopia symptoms	
13. UNIT WISE DETAILS	No. of Units: 04	
Unit Number: 1	No. of Lectures: 10	Title: Accommodation & Presbyopia
Content Summary: Far and near point of accommodation, Range and amplitude of accommodation, Mechanism of accommodation, Variation of accommodation with age, Anomalies of accommodation, Presbyopia, Hypermetropia and accommodation. Convergence: Type, Measurement and Anomalies, Relationship between accommodation and convergence-AC/A ratio		
Unit Number: 2	No. of Lectures: 10	Title: Objective Refraction
Content Summary: Objective Refraction (Static & Dynamic) Streak radiology, Principle, Procedure, Difficulties and interpretation of findings, Transposition and spherical equivalent, Dynamic retinoscopy various methods, Radical retinoscopy and near radiology, Cycloplegic refraction.		
Unit Number: 3	No. of Lectures: 10	Title: Subjective Refraction
Content Summary: Principle and fogging, fixed astigmatic dial (Clock dial), Combination of fixed and rotator dial (Fan and block test), J.C.C, Duo chrome test o Binocular balancing- alternate occlusion, prism dissociation, dissociate Duo chrome balance, Borish dissociated fogging o Binocular Refraction-Various techniques.		
Unit Number: 4	No. of Lectures: 6	Title: Effective Power & Magnification
Content Summary: Effective Power & Magnification: Ocular refraction vs. Spectacle refraction, Spectacle magnification vs. Relative spectacle magnification, Axial vs. Refractive ametropia, Knapp's law, Ocular accommodation vs. Spectacle accommodation, Retinal image blur-Depth of focus and depth of field		
14. Instructions for students • Before coming in the class please read about visual optics. • All students should be able to know the clinical skills of refraction • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.		
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not)		
Yes No ✓		
Describe (if yes):		
NA		

16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3		1. Weak	2. Moderate 3. High ✓	
b) SDG: NA		1. Weak	2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable				
18. Books Recommended: Reference Books: - Theodore Grosvenor: Primary Care Optometry, 5th edition, Butterworth –Heinemann, 2007 Duke –Elder’s practice of Refraction - AI Lens: Optics, Retinoscopy, and Refractometry: 2nd edition, SLACK Incorporated (p) Ltd, 2006 - George K. Hans, Kenneth Cuiffreda: Models of the visual system, Kluwer Academic, NY, 2002 Leonard Werner, Leonard J. Press: Clinical Pearls in Refractive Care, Butterworth – Heinemann, 2002 - David B. Elliot: Clinical Procedures in Primary Eye care, 3rd edition, Butterworth – Heinemann, 2007 - WJ Benjamin: Borish’s clinical refraction,2nd edition, Butterworth Heinemann, Missouri, USA,2006 E-Book: NA Reference websites: NA				
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA				
Experiential Learning Component				
Sr. No.	Topic	Submissions/Assessment	COs covered	
1.	Accommodation & Presbyopia	MSE, ESE and Continuous Evaluation	COBOP2109.1	
2.	Objective Refraction	MSE, ESE and Continuous Evaluation	COBOP2109.2	
3.	Subjective Refraction	MSE, ESE and Continuous Evaluation	COBOP2109.3	
4.	Effective Power &Magnification	MSE, ESE and Continuous Evaluation	COBOP2109.4, COBOP2109.5	
Activities for Differential learning Needs				
Sr. No.	Learning Level	Activities	Assessment	
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva	
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva	
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks	
Evaluation Scheme				
S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA

1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2109.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2109.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2109.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2109.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2109.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

BOP 2716: PATHOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP 2716	4. L-T-P 2-0-0	5. Credits 2	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name) BOP2704 Ocular Disease I				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☐				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus: Unit-I: Inflammation and repair, Infection in general, Specific infections, Tuberculosis, Leprosy, Syphilis, Fungal infection, Viral chlamydial infection. Unit-II Neoplasia, Haematology, Anaemia, Leukaemia, Bleeding disorders Unit-III Circulatory disturbances, Thrombosis, Infarction, Embolism Clinical pathology, Interpretation of urine report, Interpretation of blood smears Unit-IV Immune system, Shock, Anaphylaxis, Allergy Practical: •How to prepare blood smear •DLC and TLC •Histopathology •Preparation of tissue smear •Interpretation of urine report •Interpretation of blood smears •Cytopathology				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 36	Tutorials: Nil		Practical's: 12	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				

COBOP2716.1	Demonstrate Understanding and Application of Pathophysiological Concepts
COBOP2716.2	Analyze and Evaluate Clinical Pathological Data
COBOP2716.3	Integrate Knowledge of Haematological Disorders and Neoplasia
COBOP2716.4	Apply Critical Thinking in Assessing Circulatory Disturbances
COBOP2716.5	Synthesize Concepts of Immune Response and Clinical Manifestations
13. UNIT WISE DETAILS	No. of Units: 04
Unit Number: 1	No. of Lectures: 6 Title: Infections
Content Summary: Inflammation and repair, Infection in general, Specific infections, Tuberculosis, Leprosy, Syphilis, Fungal infection, Viral chlamydial infection.	
Unit Number: 2	No. of Lectures: 6 Title: Blood disorders
Content Summary: Neoplasia, Haematology, Anaemia, Leukaemia, Bleeding disorders	
Unit Number: 3	No. of Lectures: 6 Title: Heart and clinical pathology
Content Summary: Circulatory disturbances, Thrombosis, Infarction, Embolism Clinical pathology, Interpretation of urine report, Interpretation of blood smears	
Unit Number: 4	No. of Lectures: 6 Title: Immunology
Content Summary: Immune system, Shock, Anaphylaxis, Allergy	
14. Instructions for students • Before coming in the class please read about eye diseases • All students should be able to know the systemic diseases and their ocular manifestations • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate ✓ 3. High
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended:	

• K S Ratnagar: Pathology of the eye & orbit, Jaypee brothers Medical Publishers, 1997 • CORTON KUMAR AND ROBINS: Pathological Basis of the Disease, 7th Edition, Elsevier, New Delhi, 2004. • S R Lakhani Susan AD & Caroline JF: Basic Pathology: An introduction to the mechanism of disease, 1993. E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Infections	MSE, ESE and Continuous Evaluation	COBOP2716.1
2.	Blood disorders	MSE, ESE and Continuous Evaluation	COBOP2716.2, COBOP2716.3
3.	Heart and clinical pathology	MSE, ESE and Continuous Evaluation	COBOP2716.4
4.	Immunology	MSE, ESE and Continuous Evaluation	COBOP2716.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2716.1	1		1	3	1					3	3	1	1	
COBOP2716.2	1		1	3	1					3	3	1	1	
COBOP2716.3	1		2	3	2	2	2	2	2	3	3	2	1	
COBOP2716.4	1		2	3	2	2	2	2	2	3	3	2	1	
COBOP2716.5	1		2	3	2	2	2	2	2	3	3	2	1	
Average	1		1.6	3	1.6	1.2	1.2	1.2	1.2	3	3	1.6	1	

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 2505: CLINICAL OPTOMETRY III AND COMMUNITY CARE

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5		3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry		BOP 2505	0-0-6	3
Semester: IV				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
BOP 1502 Clinical Optometry I, BOP 2503 Clinical Optometry II				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☒ Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
Practical: Students will continue their observationship in the Indira Gandhi Eye Hosiptal and Research Center, Gurgaon. In addition to concepts learnt in Clinical Optometry -II in the previous semester, students will also learn to present clinical cases. Case Presentation •Overview of patient history-taking and case presentation •Understanding of the importance of accurate and clear case presentation •Practice with case presentation skills				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 90 hrs
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2505.1	Test for objective, and subjective refraction and interpret the results			
COBOP2505.2	Analyze condition using Torch Light Examination (TLE) of the eye, pupillary evaluation, and photo stress test and interpret the results			
COBOP2505.3	Test for Slit lamp bio-microscopy for evaluating the integrity of the anterior segment of the eye, Intra-Ocular Pressure, and document the findings			
COBOP2505.4	Perform tests to assess the tear function and lacrimal system			
COBOP2505.5	Test using direct and indirect ophthalmoscopy for evaluating the posterior segment of the eye and document the findings			
13. UNIT WISE DETAILS			No. of Units: 01	
14. Instructions for students				
- Before coming in the class please read about clinical procedures - All students should be able to know the clinical skills learnt in previous semesters				

- All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: - Kumar, V., Abbas, A. K., Aster, J. C., & Robbins, S. L. (Eds.). (2021). Robbins Basic Pathology (10th ed.). Elsevier. - Cotran, R. S., Kumar, V., & Collins, T. (Eds.). (2021). Robbins and Cotran Pathologic Basis of Disease (10th ed.). Elsevier. - Rubin, E., & Reisner, H. M. (Eds.). (2021). Rubin's Pathology: Clinicopathologic Foundations of Medicine (8th ed.). Wolters Kluwer. - Mitchell, R. N., & Kumar, V. (Eds.). (2021). Pocket Companion to Robbins and Cotran Pathologic Basis of Disease (10th ed.). Elsevier. - Abbas, A. K., & Lichtman, A. H. (Eds.). (2020). Basic Immunology: Functions and Disorders of the Immune System (6th ed.). Elsevier. E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Clinical Optometry	MSE, ESE and Continuous Evaluation	COBOP2505.1, COBOP2505.2, COBOP2505.3, COBOP2505.4, COBOP2505.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-6)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2505.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2505.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2505.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2505.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2505.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP 2715: MEDICAL PSYCHOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP 2715	4. L-T-P 2-0-0	5. Credits 2	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Introduction to Psychology Intelligence Learning, Memory, Personality, Motivation. Unit-II: Body Integrity – one's body image The patient in his Milieu Unit-III: The self-concept of the therapist, Therapist-patient relationship – some guidelines. Illness, its impact on the patient Maladies of the age and their impact on the patient's own and others concept of his body image. Unit-IV Adapting changes in Vision Why Medical Psychology demands commitment?				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 30		Tutorials: Nil		Practical's: Nil
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2715.1	Explain what the field of Psychology studies			
COBOP2715.2	Describe the different areas of Psychology.			
COBOP2715.3	Describe the way by which Psychology is linked to Medicine.			
COBOP2715.4	Discuss behavior in terms of its psychological determinants, and strategies leading to health behavior change.			
COBOP2715.5	Examine the relationship between stress and health, and critically evaluate stress modification strategies.			

13. UNIT WISE DETAILS		No. of Units: 04	
Unit Number: 1 No. of Lectures: 2 Title: Introduction			
Content Summary: Introduction to Psychology Intelligence Learning, Memory, Personality, Motivation.			
Unit Number: 2 No. of Lectures: 2 Title: Body language			
Content Summary: Body Integrity – one's body image The patient in his Milieu			
Unit Number: 3 No. of Lectures: 2 Title: Role of therapist			
Content Summary: The self-concept of the therapist, Therapist-patient relationship – some guidelines. Illness, its impact on the patient Maladies of the age and their impact on the patient's own and others concept of his body image.			
Unit Number: 4 No. of Lectures: 2 Title: Medical Psychology			
Content Summary: Adapting changes in Vision Why Medical Psychology demands commitment?			
14. Instructions for students • Before coming in the class please read about eye diseases • All students should be able to know the systemic diseases and their ocular manifestations • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate ✓ 3. High	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Patricia Barkway. Psychology for health professionals, 2nd edition, Elsevier, 2013 E-Book: NA			

Reference websites: NA			
19. E-Learning Resources: NA			
NPTEL: NA			
Animated Lab Videos: NA			
MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP2715.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP2715.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP2715.3, COBOP2715.4
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP2715.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2715.1	2		2	3	1					2	3		1	3
COBOP2715.2	2		2	3	1					2	3		1	3

COBOP2715.3	2	2	2	3	2			1	1	2	3		2	3
COBOP2715.4	2	2	2	3	2			1	1	2	3		2	3
COBOP2715.5	2	2	2	3	2			1	1	2	3		2	3
Average	2	1.2	2	3	1.6			0.6	0.6	2	3		1.6	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP2507 DRY EYE WORKSHOP

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code BOP2507	4. L-T-P 0-0-4	5. Credits 2
6. Type of Course (Tick one):	Programme Core Programme Elective ☒ Open Elective VAC		
7. Prerequisite(s), if any – NA			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: UNIT 1 - Introduction to Dry Eye Syndrome UNIT 2 - Pathophysiology of Dry Eye UNIT 3- Traditional Dry Eye Evaluation Methods UNIT 4 - Advanced Dry Eye Evaluation Technologies UNIT 5- Clinical Applications of Advanced Dry Eye Evaluation UNIT 6- Future Directions and Emerging Technologies			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 0	Tutorials: 0	Practical's: 60	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP2507.1	Demonstrate an understanding of the complex etiology and pathophysiology of dry eye syndrome.		
COBOP2507.2	proficient in using advanced diagnostic tools and techniques for evaluating dry eye conditions.		
COBOP2507.3	Interpret and analyze data obtained from various dry eye evaluation methods.		
COBOP2507.4	Develop critical thinking skills to evaluate the reliability and validity of different dry eye assessment modalities.		
COBOP2507.5	Apply knowledge of advancements in dry eye evaluation to formulate effective treatment plans tailored to individual patient needs.		
COBOP2507.6	Demonstrate competency in communicating dry eye evaluation findings and treatment recommendations to patients and healthcare professionals.		
13. UNIT WISE DETAILS		No. of Units: ____4____	
Unit 1:	No. Of Lectures: 4	Title: Introduction to Dry Eye Syndrome	
Content Summary: - Overview of dry eye syndrome: Definition, prevalence, and impact on quality of life - Etiology and risk factors associated with dry eye syndrome - Classification and subtypes of dry eye syndrome			
Unit Number: 2	No. of Lectures: 6	Title: Pathophysiology of Dry Eye	
Content Summary:			

- Tear film dynamics and the role of tear components in maintaining ocular surface health - Mechanisms of inflammation and neurosensory dysfunction in dry eye syndrome - Corneal and conjunctival changes associated with dry eye pathology	
Unit Number: 3 No. of Lectures: 5 Title: Traditional Dry Eye Evaluation Methods	
Content Summary: - Review of traditional methods for diagnosing and evaluating dry eye syndrome: - Symptom assessment tools - Ocular surface staining techniques (fluorescein and lissamine green) - Tear film break-up time (TBUT) - Schirmer test - Limitations and challenges of traditional dry eye evaluation methods	
Unit Number: 4 No. of Lectures: 6 Title: Advanced Dry Eye Evaluation Technologies	
Content Summary: : - Introduction to advanced diagnostic tools and technologies for dry eye evaluation: - Ocular surface imaging (corneal topography, meibography, and confocal microscopy) - Tear osmolality measurement - Inflammatory biomarkers and cytokine analysis - Tear lipid layer assessment - Tear interferometry - Comparative analysis of advanced dry eye evaluation technologies	
Unit Number: 5 No. of Lectures: 5 Title: Clinical Applications of Advanced Dry Eye Evaluation	
Content Summary: : - Integration of advanced dry eye evaluation methods into clinical practice - Case studies and practical demonstrations of advanced dry eye evaluation techniques - Interpretation of findings and formulation of treatment plans based on advanced dry eye evaluation data	
Unit Number: 6 No. of Lectures: 5 Title: Future Directions and Emerging Technologies	
Content Summary: : - Overview of ongoing research and development in dry eye evaluation - Exploration of emerging technologies and potential future advancements in the field - Ethical considerations and challenges in adopting new technologies for dry eye evaluation	
14. Instructions for students: (Write the step-wise instructions for the students) a) Before coming in the class please read about the topics covered and the next topic to be taught. b) Please read about the basics the topic included in syllabus. c) All student must secure at least 40% marks in each evaluation component d) All students must maintain the attendance at least 75%. e) All student must submit a project and give class test either in group or single (as suggested)	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG.....3.....	1. Weak 2. Moderate 3. High ✓
b) SDG.....4.....	1. Weak 2. Moderate 3. High ✓

17. Books Recommended: .

1. Dry Eye: A practical approach

Editor: Colin Chan

Publisher Springer Berlin, Heidelberg

Hardcover ISBN 978-3-662-44105-3 Published: 12 March 2015

2. The Dry Eye Remedy, Revised Edition: The Complete Guide to Restoring the Health and Beauty of Your Eyes Paperback – Illustrated, 26 April 2016

Author: Robert Latkany M.D.

Publisher Hatherleigh Press

Edition Revised

Publication 26 April 2016

3. Dry Eye Disease: The Clinician's Guide to diagnosis and treatment

Author: Alfonso Dargie

Publisher American Medical Publishers

Publication year 2022

Reference Books:**E-Book: NA****Reference websites: NA****18.E-Learning Resources NA****NPTEL: NA****Animated Lab Videos: NA****MOOC Supplement NA****Experiential Learning Component**

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP2507.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP2507.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP2507.3
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP2507.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP2507.5
6.	Unit VI	MSE, ESE and Continuous Evaluation	COBOP2507.6

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme:

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-4)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Preliminary study	Relevant cases	New techniques applied

Class Test	Normal content/topics	Elaboration with proof of the content	Latest Research contents with proof of the content
Project/ Assignments	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	40-70%	70-90%	>90%
External Evaluation (ETE)	40-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2507.1	3		3	3	3	3	3	3	3	3	3	3	3	3
COBOP2507.2	3		3	3	3	3	3	3	3	3	3	3	3	3
COBOP2507.3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2507.4	3	2	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2507.5	3	2	3	3	3	3	3	3	3	3	3	3	3	3
COBOP2507.6	3	2	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	1.6	3	3	3	3	3	3	3	3	3	3	3	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP2508 AI AND MACHINE LEARNING IN OPTOMETRY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP2508	0-0-4	2	
Semester: IV				
6. Type of Course (Tick one):	Programme Core Programme Elective ☒ Open Elective VAC			
7. Prerequisite(s), if any – NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit 1: Introduction to AI & ML in Optometry Unit 2: AI in Ocular Disease Diagnosis Unit 3: AI for Automated Refraction & Optical Dispensing Unit 4: Challenges & Ethical Considerations Unit 5: Future Trends & Hands-on Experience				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 0	Tutorials: 0		Practical's: 60	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2508.1	Explain key AI and ML concepts and their relevance in modern optometry.			
COBOP2508.2	Analyze the role of AI-powered tools in diagnosing ocular conditions such as diabetic retinopathy, glaucoma, and age-related macular degeneration.			
COBOP2508.3	Evaluate the advantages and limitations of AI applications in optometric practice.			
COBOP2508.4	Interpret AI-generated reports from fundus imaging, visual field tests, and corneal topography.			
COBOP2508.5	Apply AI-based solutions for improved clinical decision-making and patient management.			
13. UNIT WISE DETAILS				No. of Units: ____5____
Unit 1:	No. Of Lectures: 4	Title: Introduction to AI & ML in Optometry		
Content Summary: - Basics of AI, ML, and deep learning - Overview of AI applications in healthcare and optometry				
Unit Number: 2	No. of Lectures: 6	Title: AI in Ocular Disease Diagnosis		
Content Summary: - AI in diabetic retinopathy screening - AI-based glaucoma detection using OCT and visual fields - AI applications in keratoconus detection and corneal topography				

Unit Number: 3 No. of Lectures: 5 Title: AI for Automated Refraction & Optical Dispensing			
Content Summary: - AI-powered autorefractors and wavefront aberrometry - Personalized lens recommendations using AI - AI-driven tele-optometry for remote eye care			
Unit Number: 4 No. of Lectures: 6 Title: Challenges & Ethical Considerations			
Content Summary: : - Data privacy and security in AI-assisted diagnostics - Ethical concerns of AI in patient care - Limitations of AI models in clinical practice			
Unit Number: 5 No. of Lectures: 5 Title: Future Trends & Hands-on Experience			
Content Summary: : - Emerging technologies in AI-driven optometry - Demonstration of AI-based diagnostic tools - Case discussions on AI-influenced patient care			
14. Instructions for students: (Write the step-wise instructions for the students) f) Before coming in the class please read about the topics covered and the next topic to be taught. g) Please read about the basics the topic included in syllabus. h) All student must secure at least 40% marks in each evaluation component i) All students must maintain the attendance at least 75%. j) All student must submit a project and give class test either in group or single (as suggested)			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ☒ Describe (if yes): NA			
16.SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....3.....		1. Weak 2. Moderate 3. High ☒	
b) SDG.....4.....		1. Weak 2. Moderate 3. High ☒	
17. Books Recommended: . Reference Books: E-Book: NA Reference websites: NA			
18. E-Learning Resources NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP2508.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP2508.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP2508.3
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP2508.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP2508.5

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme:

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-4)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Preliminary study	Relevant cases	New techniques applied
Class Test	Normal content/topics	Elaboration with proof of the content	Latest Research contents with proof of the content
Project/ Assignments	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	40-70%	70-90%	>90%
External Evaluation (ETE)	40-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP2508.1			3	3	3	3	3	3	3	3	3	3	3	3
COBOP2508.2			3	3	3	3	3	3	3	3	3	3	3	3
COBOP2508.3			3	3	3	3	3	3	3	3	3	3	3	3
COBOP2508.4			3	3	3	3	3	3	3	3	3	3	3	3
COBOP2508.5			3	3	3	3	3	3	3	3	3	3	3	3
Average			3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

IPT 2002: INTERDISCIPLINARY PROJECT

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5 Program Name: Bachelor of Optometry Semester: IV	3. Course Code IPT 2002	4. L-T-P 0-2-2	5. Credits 3	
6. Type of Course (Tick one):	Programme Core Programme Elective Open Elective ☒ VAC			
7. Prerequisite(s), if any (Mention course code and name) IPT 2001: Interdisciplinary project				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester ☒				
9. Focus: Employability Entrepreneurship ☒ Skill Development Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		Experiential learning ☒ Participative Learning Problem solving methodologies		
11. Brief Syllabus: - The objective of this course is to develop a student's knowledge of and appreciation for the Interdisciplinary nature of knowledge and learning - Importance and value of integrating knowledge and perspectives from multiple disciplines as a means to evaluating and understanding complex topics, problems, issues, phenomena, and events - Competencies learned during the educational process and to apply these competencies in a real-world application				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: 12		Practical's: 12 hrs
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP2002.1	Acquire, analyze and evaluate data to create, organize and document information (evaluation through report)			
COBOP2002.2	Function effectively and ethically as individual and team member or leader – (evaluation through peer evaluation and plagiarism check)			
COBOP2002.3	Demonstrate skills of learning how to learn (evaluation through the lifelong learning rubric)			
COBOP2002.4	Demonstrate effective oral and written communication skills (evaluation through the report and presentation)			
COBOP2002.5	Understanding of project management in multi-disciplinary environment (evaluation through minutes of meeting of all group meetings and final presentation)			
13. UNIT WISE DETAILS		No. of Units: NA		
14. Instructions for students - Before coming in the class please read about clinical procedures - All students should be able to know the clinical skills learnt in previous semesters - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.				

15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓			
Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Project	MSE, ESE and Continuous Evaluation	COIPT2002.1, COIPT2002.2, COIPT2002.3, COIPT2002.4, COIPT2002.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-2-2)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COIPT2002.1	1		1	3	1					3	3	1	1	3
COIPT2002.2	1		1	3	1					3	3	1	1	3
COIPT2002.3	1	1	2	3	2	2	2	2	2	3	3	2	2	3
COIPT2002.4	1	1	2	3	2	2	2	2	2	3	3	2	2	3
COIPT2002.5	1	1	2	3	2	2	2	2	2	3	3	2	2	3
Average	1	0.6	1.6	3	1.6	1.2	1.2	1.2	1.2	3	3	1.6	1.6	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

Semester V

BOP 3709: GERIATRIC OPTOMETRY AND PEDIATRIC OPTOMETRY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3709	2-0-0	2	
Semester: V				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Structural, and morphological changes of eye in elderly Physiological changes in eye in the course of aging. Introduction to geriatric medicine – epidemiology, need for optometry care, systemic diseases (Hypertension, Atherosclerosis, coronary heart disease, congestive Heart failure, Cerebrovascular disease, Diabetes, COPD). Unit-II Optometric Examination of the Older Adult Ocular diseases, common in old eye, with special reference to cataract, glaucoma, macular disorders, vascular diseases of the eye. Contact lenses in elderly. Unit-III Pharmacological aspects of aging. Low vision causes, management and rehabilitation in geriatrics. Spectacle dispensing in elderly – Considerations of spectacle lenses and frames. Unit-IV The Development of Eye and Vision History taking Paediatric subjects Assessment of visual acuity Normal appearance, pathology and structural anomalies of: Orbit, Eye lids, Lacrimal system, Conjunctiva, Cornea, Sclera Anterior chamber, Uveal tract, Pupil, Lens, vitreous, Fundus Oculomotor system Unit-V Refractive Examination Determining binocular status. Determining sensory motor adaptability.				

Compensatory treatment and remedial therapy for: Myopia, Pseudo myopia, Hyperopia, Astigmatism, Anisometropia, Amblyopia.		
UNIT-VI		
Remedial and Compensatory treatment of Strabismus and Nystagmus.		
Paediatric eye disorders: Cataract, Retinopathy of Prematurity, Retinoblastoma, Neuromuscular conditions (myotonic dystrophy, mitochondrial cytopathy), and Genetics.		
Anterior segment dysgenesis, Aniridia, Microphthalmos, Coloboma, Albinism.		
Spectacle dispensing for children.		
UNIT-VII		
Paediatric contact lenses, Low vision assessment in children.		
Practicals:		
•Clinical identification of various age related disorders. •Clinical identification of various pediatric disorders. •Technique of refraction in pediatric and geriatric age group •Important consideration of prescribing low vision aids in pediatric and geriatric age group. •Comprehensive assessment of pediatric and geriatric patient.		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 30	Tutorials: Nil	Practical's: Nil
12. Course Outcomes (COs)		
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP3709.1	Identify and investigate the age related changes in the eyes.	
COBOP3709.2	Explain and counsel the elderly patients	
COBOP3709.3	Demonstrate acceptable dispensing skills.	
COBOP3709.4	Demonstrate adequate knowledge on common ocular diseases.	
COBOP3709.5	Apply pediatric history which encompasses the relevant developmental, visual, medical and educational issues	
13. UNIT WISE DETAILS	No. of Units: 07	
Unit Number: 1	No. of Lectures: 7	Title: Ageing eye
Content Summary: Structural, and morphological changes of eye in elderly Physiological changes in eye in the course of aging. Introduction to geriatric medicine – epidemiology, need for optometry care, systemic diseases (Hypertension, Atherosclerosis, coronary heart disease, congestive Heart failure, Cerebrovascular disease, Diabetes, COPD).		
Unit Number: 2	No. of Lectures: 7	Title: Geriatric optometric examination
Content Summary: Optometric Examination of the Older Adult. Ocular diseases, common in old eye, with special reference to cataract, glaucoma, macular disorders, vascular diseases of the eye. Contact lenses in elderly.		
Unit Number: 3	No. of Lectures: 7	Title: Pharmacological aspects in ageing eye
Content Summary: Pharmacological aspects of aging. Low vision causes, management and rehabilitation in geriatrics. Spectacle dispensing in elderly – Considerations of spectacle lenses and frames.		
Unit Number: 4	No. of Lectures: 7	Title: Eye and vision

Content Summary:		
Unit Number: 5 No. of Lectures: 7 Title: Pediatric refraction		
Content Summary: The Development of Eye and Vision History taking Paediatric subjects Assessment of visual acuity Normal appearance, pathology and structural anomalies of: Orbit, Eye lids, Lacrimal system, Conjunctiva, Cornea, Sclera Anterior chamber, Uveal tract, Pupil, Lens, vitreous, Fundus Oculomotor system		
Unit Number: 6 No. of Lectures: 7 Title: Developmental anomalies		
Content Summary: Remedial and Compensatory treatment of Strabismus and Nystagmus. Paediatric eye disorders: Cataract, Retinopathy of Prematurity, Retinoblastoma, Neuromuscular conditions (myotonic dystrophy, mitochondrial cytopathy), and Genetics. Anterior segment dysgenesis, Aniridia, Microphthalmos, Coloboma, Albinism. Spectacle dispensing for children		
Unit Number: 7 No. of Lectures: 6 Title: Contact lenses and low vision in pediatric age group		
Content Summary: Paediatric contact lenses, Low vision assessment in children.		
14. Instructions for students • Before coming in the class please read about general anatomy and physiology • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.		
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA		
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3	1. Weak	2. Moderate 3. High ✓
b) SDG: NA	1. Weak	2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable		
18. Books Recommended: Reference Books: • A.J. Rosenbloom Jr & M.W. Morgan: Vision and Aging, Butterworth Heinemann, Missouri, 2007. • OP Sharma: Geriatric Care –A textbook of geriatrics and Gerontology, viva books, New Delhi, 2005 • VS Natarajan: An update on Geriatrics, Sakthi Pathipagam, Chennai, 1998 • DE Rosenblatt, VS Natarajan: Primer on geriatric Care A clinical approach to the older patient, Printers Castle, Cochin, 2002 • Pediatric Optometry - JEROME ROSNER, Butterworth, London 1982 • Pediatric Optometry –William Harvey/ Bernard Gilmartin, Butterworth –Heinemann, 2004 Reference websites: NA		

19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Ageing eye	MSE, ESE and Continuous Evaluation	COBOP3709.1
2.	Geriatric optometric examination	MSE, ESE and Continuous Evaluation	COBOP3709.2
3.	Pharmacological aspects in ageing eye	MSE, ESE and Continuous Evaluation	COBOP3709.3
4.	Eye and vision	MSE, ESE and Continuous Evaluation	COBOP3709.3
5.	Pediatric refraction	MSE, ESE and Continuous Evaluation	COBOP3709.4
6.	Developmental anomalies	MSE, ESE and Continuous Evaluation	COBOP3709.4
7.	Contact lenses and low vision in pediatric age group	MSE, ESE and Continuous Evaluation	COBOP3709.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3709.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3709.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3709.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3709.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3709.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3102: CONTACT LENS I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3102	3-0-2	4	
Semester: V				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability ☒ Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Introduction to Contact lenses, Definition, Classification / Types, History of Contact Lenses, Optics of Contact Lenses, Magnification & Visual field, Accommodation & Convergence, Back & Front Vertex Power / Vertex distance calculation. Unit-II: Review of Anatomy & Physiology of Tear film Cornea, Lids & Conjunctiva., Introduction to CL materials, Monomers, Polymers, Properties of CL materials, Physiological (Dk, Ionicity, Water content), Physical (Elasticity, Tensile strength, Rigidity), Optical (Transmission, Refractive index) Indications and contraindications. Unit-III: Parameters / Designs of Contact Lenses & Terminology, RGP Contact Lens materials, Manufacturing Rigid and Soft Contact Lenses – various methods, Pre-Fitting examination – steps, significance, recording of results, Correction of Astigmatism with RGP lens Unit-IV: Types of fit – Steep, Flat, Optimum – on spherical cornea with spherical lenses, Types of fit – Steep, Flat, Optimum – on Toric cornea with spherical lenses, Calculation and finalising Contact lens parameters, Ordering Rigid Contact Lenses – writing a prescription to the Laboratory, Checking and verifying Contact lenses from Laboratory, Modifications possible with Rigid lenses Unit-V: Common Handling Instructions, Insertion & Removal Techniques, Do's and Don'ts, Care and Maintenance of Rigid lenses, cleaning agents & Importance, rinsing agents & Importance, disinfecting agents & importance, Lubricating & Enzymatic cleaners, Follow up visit examination, Complications of RGP lenses				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 45		Tutorials: Nil		Practical's: 30
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3102.1	Understand the basics of contact lenses			
COBOP3102.2	List the important properties of contact lenses			
COBOP3102.3	Finalize the CL design for various kinds patients			

COBOP3102.4	Recognize various types of fitting
COBOP3102.5	Explain all the procedures to patient
COBOP3102.6	Identify and manage the adverse effects of contact lens
13. UNIT WISE DETAILS	No. of Units: 05
Unit Number: 1 No. of Lectures: 7 Title: Introduction	
Content Summary: Introduction to Contact lenses, Definition, Classification / Types, History of Contact Lenses, Optics of Contact Lenses, Magnification & Visual field, Accommodation & Convergence, Back & Front Vertex Power / Vertex distance calculation.	
Unit Number: 2 No. of Lectures: 7 Title: Contact lens properties	
Content Summary: Review of Anatomy & Physiology of Tear film Cornea, Lids & Conjunctiva., Introduction to CL materials, Monomers, Polymers, Properties of CL materials, Physiological (Dk, Ionicity, Water content), Physical (Elasticity, Tensile strength, Rigidity), Optical (Transmission, Refractive index) Indications and contraindications.	
Unit Number: 3 No. of Lectures: 7 Title: Pre-fit evaluation	
Content Summary: Parameters / Designs of Contact Lenses & Terminology, RGP Contact Lens materials, Manufacturing Rigid and Soft Contact Lenses – various methods, Pre-Fitting examination – steps, significance, recording of results, Correction of Astigmatism with RGP lens	
Unit Number: 4 No. of Lectures: 7 Title: RGP CL fitting assessment	
Content Summary: Types of fit – Steep, Flat, Optimum – on spherical cornea with spherical lenses, Types of fit – Steep, Flat, Optimum – on Toric cornea with spherical lenses, Calculation and finalising Contact lens parameters, Ordering Rigid Contact Lenses – writing a prescription to the Laboratory, Checking and verifying Contact lenses from Laboratory, Modifications possible with Rigid lenses	
Unit Number: 5 No. of Lectures: 6 Title: Insertion, removal and troubleshooting	
Content Summary: Common Handling Instructions, Insertion & Removal Techniques, Do's and Don'ts, Care and Maintenance of Rigid lenses, cleaning agents & Importance, rinsing agents & Importance, disinfecting agents & importance, Lubricating & Enzymatic cleaners, Follow up visit examination, Complications of RGP lenses	
14. Instructions for students • Before coming in the class please read about general anatomy and physiology • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate 3. High ✓
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	

18. Books Recommended: Reference Books: - IACLE modules 1 - 10 - 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 Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Introduction	MSE, ESE and Continuous Evaluation	COBOP3102.1
2.	Contact lens properties	MSE, ESE and Continuous Evaluation	COBOP3102.2
3.	Pre-fit evaluation	MSE, ESE and Continuous Evaluation	COBOP3102.3
4.	RGP CL fitting assessment	MSE, ESE and Continuous Evaluation	COBOP3102.4
5.	Insertion, removal and troubleshooting	MSE, ESE and Continuous Evaluation	COBOP3102.5, COBOP3102.6
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner

Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3102.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3102.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3102.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3102.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3102.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3102.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3103: LOW VISION CARE

1. Department/ School:	SCHOOL OF MEDICAL AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry Semester: V	BOP 3103	2-0-2	3	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name) NA				
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus: Unit-I: Definitions & classification of Low vision, Epidemiology of low vision, Model of low vision service Unit-II: Pre-clinical evaluation of low vision patients – prognostic & psychological factors; psychosocial impact of low vision, Types of low vision aids – optical aids, non-optical aids & electronic devices, Optics of low vision aids Unit-III: Clinical evaluation – assessment of visual acuity, visual field, selection of low vision aids, instruction & training, Paediatric Low Vision care, Low vision aids – dispensing & prescribing aspects Unit-IV: Visual rehabilitation & counselling, Legal aspects of Low vision in India, Case Analysis Practical: •Attending in low vision care clinic and history taking. •Determining the type of telescope and its magnification (Direct comparison method & calculated method). •Determining the change in field of view with different magnification and different eye to lens distances with telescopes and magnifiers. •Inducing visual impairment and prescribing magnification. •Determining reading speed with different types of low vision aids with same magnification. •Determining reading speed with a low vision aid of different magnifications				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 30		Tutorials: Nil		Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3103.1	Analyse and demonstrate various causes of low vision.			
COBOP3103.2	Criticize and demonstrate tests to assess a low vision patient.			
COBOP3103.3	Summarize, counsel and provide low vision devices based on the condition with correct demonstration.			

COBOP3103.4	Discover the needs and help visually impaired utilize their residual vision optimally to perform daily tasks.
COBOP3103.5	Able to rehabilitate visually impaired patients of different age group on different working conditions.
13. UNIT WISE DETAILS	
No. of Units: 04	
Unit Number: 1	No. of Lectures: 6 Title: Introduction to Low Vision Care
Content Summary: Definitions & classification of Low vision, Epidemiology of low vision, Model of low vision service	
Unit Number: 2	No. of Lectures: 6 Title: Pre-clinical Low Vision evaluation
Content Summary: Pre-clinical evaluation of low vision patients – prognostic & psychological factors; psychosocial impact of low vision, Types of low vision aids – optical aids, non-optical aids & electronic devices, Optics of low vision aids	
Unit Number: 3	No. of Lectures: 6 Title: Clinical Evaluation
Content Summary: Clinical evaluation – assessment of visual acuity, visual field, selection of low vision aids, instruction & training, Paediatric Low Vision care, Low vision aids – dispensing & prescribing aspects	
Unit Number: 4	No. of Lectures: 6 Title: Visual rehabilitation
Content Summary: Visual rehabilitation & counselling, Legal aspects of Low vision in India, Case Analysis	
Practical Attending in low vision care clinic and history taking. •Determining the type of telescope and its magnification (Direct comparison method & calculated method). •Determining the change in field of view with different magnification and different eye to lens distances with telescopes and magnifiers. •Inducing visual impairment and prescribing magnification. •Determining reading speed with different types of low vision aids with same magnification. •Determining reading speed with a low vision aid of different magnifications	
14. Instructions for students • Before coming in the class please read about general anatomy and physiology • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate 3. High ✓
b) SDG: NA	1. Weak 2. Moderate 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended: Reference Books:	

- Christine Dickinson: Low Vision: Principles and Practice Low vision care, 4th edition, Butterworth-Heinemann, 1998
- Sarika G, Sailaja MVSE Vaithilingam: practice of Low vision –A guide book, Medical Research Foundation, 2015.

Reference websites: NA

19. E-Learning Resources: NA

NPTEL: NA

Animated Lab Videos: NA

MOOC Supplemented: NA

Experiential Learning Component

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Introduction to Low Vision Care	MSE, ESE and Continuous Evaluation	COBOP3103.1
2.	Pre-clinical Low Vision evaluation	MSE, ESE and Continuous Evaluation	COBOP3103.2, COBOP3103.3
3.	Clinical Evaluation	MSE, ESE and Continuous Evaluation	COBOP3103.4
4.	Visual rehabilitation	MSE, ESE and Continuous Evaluation	COBOP3103.5

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (2-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3103.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3103.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3103.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3103.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3103.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP3104 BINOCULAR VISION-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP3104	3-0-2	4	
Semester: V				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐				
Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☒				
8. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
9. Brief Syllabus:				
UNIT-I				4h
Binocular Vision and Space perception				
1. Relative subjective visual direction. 2. Retinal motor value 3. Grades of BSV 4. SMP and Cyclopean Eye 5. Correspondence, 6. Fusion, Diplopia, Retinal rivalry 7. Horopter 8. Physiological Diplopia and Suppression 9. Stereopsis, Panama's area, BSV. 10. Stereopsis and monocular clues - significance. 11. Egocentric location, clinical applications. 12. Theories of Binocular vision.				
UNIT-II				6h
Anatomy of Extra Ocular Muscles				
1. Recti and Obliques, LPS. 2. Innervation & Blood Supply.				
Physiology of Ocular movements.				
1. Centre of rotation, Axes of Fick. 2. Action of individual muscle.				
UNIT-III				6 h
1. Donder's and Listing's law 2. Sherrington's law 3. Herring's law				
Unocular & Binocular movements - fixation, saccadic & pursuits.				

4. Version & Vergence.	
5. Fixation & field of fixation	
UNIT-IV	10 h
Near Vision Complex Accommodation	
1. Definition and mechanism (process).	
2. Methods of measurement.	
3. Stimulus and innervation.	
4. Types of accommodation.	
5. Anomalies of accommodation – aetiology and management.	
Convergence	
1. Definition and mechanism.	
2. Methods of measurement.	
3. Types and components of convergence - Tonic, accommodative, fusional, proximal.	
4. Anomalies of Convergence – aetiology and management.	
UNIT-V	10 h
Sensory adaptations	
1. Confusion	
Suppression	
2. Investigations	
3. Management	
4. Blind spot syndrome	
Abnormal Retinal Correspondence	
5. Investigation and management	
6. Blind spot syndrome	
7. Eccentric Fixation- Investigation and management	
8. Amblyopia	
- Classification	
- Aetiology	
- Investigation	
- Management	
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)	
Lectures: 45	Tutorials: Nil
Practical's: 30	
10. Course Outcomes (COs)	
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:	
COBOP3104.1	Outline the gross anatomy and physiology of extra ocular muscles and crystalline lens.
COBOP3104.2	Explain the various components of Binocular vision and relate them to the factors that affect the normal binocular functioning
COBOP3104.3	Demonstrate the different laws and principles of Binocular vision
COBOP3104.4	Perform tests to assess the Binocular vision
COBOP3104.5	Adapt skills to document and interpret the results of various binocular vision assessment tests
11. UNIT WISE DETAILS	
No. of Units: 05	
UNIT-I	4h
Binocular Vision and Space perception	
1. Relative subjective visual direction.	
2. Retinol motor value	
3. Grades of BSV	
4. SMP and Cyclopean Eye	

- Correspondence, - Fusion, Diplopia, Retinal rivalry - Hopter - Physiological Diplopia and Suppression - Stereopsis, Panama's area, BSV. - Stereopsis and monocular clues - significance. - Egocentric location, clinical applications. - Theories of Binocular vision.	
UNIT-II	6h
Anatomy of Extra Ocular Muscles	
- Recti and Obliques, LPS. - Innervation & Blood Supply.	
Physiology of Ocular movements.	
- Centre of rotation, Axes of Fick. - Action of individual muscle.	
UNIT-III	6 h
- Donder's and Listing's law - Sherrington's law - Herring's law	
Unocular & Binocular movements - fixation, saccadic & pursuits.	
- Version & Vergence. - Fixation & field of fixation	
UNIT-IV	10 h
Near Vision Complex Accommodation	
- Definition and mechanism (process). - Methods of measurement. - Stimulus and innervation. - Types of accommodation. - Anomalies of accommodation – aetiology and management.	
Convergence	
- Definition and mechanism. - Methods of measurement. - Types and components of convergence - Tonic, accommodative, fusional, proximal. - Anomalies of Convergence – aetiology and management.	
UNIT-V	10 h
Sensory adaptations	
1. Confusion	
Suppression	
- Investigations - Management - Blind spot syndrome	
Abnormal Retinal Correspondence	
- Investigation and management - Blind spot syndrome - Eccentric Fixation- Investigation and management - Amblyopia	
- Classification	
- Aetiology	

- Investigation - Management			
12. Multi-Disciplinary Approach (Please mention whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
13. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3 b) SDG: NA		1. Weak 2. Moderate 3. High ✓ 1. Weak 2. Moderate 3. High	
14. Title of Lab Manual (if applicable): Not applicable			
17. Books Recommended: Reference Books: - Pradeep Sharma: Strabismus simplified, New Delhi, First edition, 1999, Modern publishers. - Fiona J. Rowe: Clinical Orthoptics, second edition, 2004, Blackwell Science Ltd - Gunter K. V. Mosby Company - Mitchell Scheinman; Bruce Wick: Clinical Management of Binocular Vision Heterophoria, - Accommodative, and Eye Movement Disorders, 2008, Lippincott Williams & Wilkins publishers Reference websites: NA			
18. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Introduction	MSE, ESE and Continuous Evaluation	COBOP3104.1
2.	EOM Anatomy	MSE, ESE and Continuous Evaluation	COBOP3104.2
3.	EOM laws	MSE, ESE and Continuous Evaluation	COBOP3104.3
4.	Near Vision Complex	MSE, ESE and Continuous Evaluation	COBOP3104.4
5.	Sensory Adaptation	MSE, ESE and Continuous Evaluation	COBOP3104.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
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1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3104.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3104.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3104.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3104.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3104.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

BOP3710 SYSTEMIC DISEASES AND OCULAR ASSOCIATIONS

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP3710	3-0-0	3	
Semester: V				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☐ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus:				
UNIT-I 7h				
Hypertension				
Definition, classification, Epidemiology, clinical examination, complications, and management. Hypertensive retinopathy				
Diabetes Mellitus				
Classification, pathophysiology, clinical presentations, diagnosis, and management, Complications				
Diabetic Retinopathy				
Thyroid Disease: Physiology, testing for thyroid disease, Hyperthyroidism, Hypothyroidism, Thyroiditis, Thyroid tumors 3.2 Grave's				
Ophthalmopathy				
UNIT-II 7h				
Acquired Heart Disease				
Ischemic Heart Disease, Congestive heart failure, Disorders of cardiac rhythm				
Ophthalmic considerations				
Cancer				
Incidence				
Etiology				
Therapy Ophthalmologic considerations				
Connective Tissue Disease				
Rheumatic arthritis				
Systemic lupus erythematosus Scleroderma				
Polymyositis and dermatomyositis				
Sjogren syndrome				
Bechet's syndrome				
Connective tissue disease				
UNIT-III 7h				

Tuberculosis		
An etiology, pathology, clinical features, pulmonary tuberculosis, diagnosis, complications, treatment tuberculosis and the eye.		
Herpes virus (Herpes simplex, Varicella Zoster, Cytomegalovirus, Epstein Barr Virus) Herpes and the eye.		
Hepatitis (Hepatitis A, B, C)		
Acquired Immunodeficiency Syndrome		
UNIT-IV		7h
Anemia (Diagnosis, clinical evaluation, consequences, Sickle cell disease, treatment, Ophthalmologic considerations)		
Common Tropical Medical Ailments		
• Malaria • Typhoid • Dengue • Filariases • Onchocerciasis • Cysticercosis • Leprosy • Nutritional and Metabolic disorder • Obesity • Hyper lipidaemia • Kwashiorkor		
Vitamin A Deficiency		
Vitamin D Deficiency		
Vitamin E Deficiency		
Vitamin K Deficiency		
Vitamin B1, B2, Deficiency		
Vitamin C Deficiency		
Myasthenia Gravis		
UNIT-V		8h
First Aid General Medical Emergencies Preoperative precautions in ocular surgeries		
Psychiatry: Basic knowledge of psychiatric condition and Patient Management		
Genetics		
• Introduction to genetics • Organization of the cell • Chromosome structure and cell division • Gene structure and basic principles of Genetics. • Genetic disorders and their diagnosis. • Genes and the eye		
Genetic counseling and genetic engineering.		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 45	Tutorials: Nil	Practical's: 0
12. Course Outcomes (COs)		
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP3710.1	Define common systemic conditions and explain their characteristics.	
COBOP3710.2	Outline a diagnostic approach for identifying common systemic conditions.	
COBOP3710.3	Analyze potential complications associated with common systemic conditions.	
COBOP3710.4	Evaluate management options available for treating common systemic conditions.	
COBOP3710.5	Identify ocular findings associated with various systemic conditions.	

COBOP3710.6	Apply first aid knowledge to respond effectively in emergency situations.
13. UNIT WISE DETAILS	No. of Units: 05
UNIT-I	7h
Hypertension	
Definition, classification, Epidemiology, clinical examination, complications, and management. Hypertensive retinopathy	
Diabetes Mellitus	
Classification, pathophysiology, clinical presentations, diagnosis, and management, Complications	
Diabetic Retinopathy	
Thyroid Disease: Physiology, testing for thyroid disease, Hyperthyroidism, Hypothyroidism, Thyroiditis, Thyroid tumors 3.2 Grave's	
Ophthalmopathy	
UNIT-II	7h
Acquired Heart Disease	
Ischemic Heart Disease, Congestive heart failure, Disorders of cardiac rhythm	
Ophthalmic considerations	
Cancer	
Incidence	
Etiology	
Therapy Ophthalmologic considerations	
Connective Tissue Disease	
Rheumatic arthritis	
Systemic lupus erythematosus Scleroderma	
Polymyositis and dermatomyositis	
Sjogren syndrome	
Bechet's syndrome	
Connective tissue disease	
UNIT-III	7h
Tuberculosis	
An etiology, pathology, clinical features, pulmonary tuberculosis, diagnosis, complications, treatment tuberculosis and the eye.	
Herpes virus (Herpes simplex, Varicella Zoster, Cytomegalovirus, Epstein Barr Virus) Herpes and the eye.	
Hepatitis (Hepatitis A, B, C)	
Acquired Immunodeficiency Syndrome	
UNIT-IV	7h
Anemia (Diagnosis, clinical evaluation, consequences, Sickle cell disease, treatment, Ophthalmologic considerations)	
Common Tropical Medical Ailments	
• Malaria • Typhoid • Dengue • Filariases • Onchocerciasis • Cysticercosis • Leprosy • Nutritional and Metabolic disorder • Obesity • Hyper lipidaemia • Kwashiorkor	
Vitamin A Deficiency	
Vitamin D Deficiency	

Vitamin E Deficiency Vitamin K Deficiency Vitamin B1, B2, Deficiency Vitamin C Deficiency Myasthenia Gravis UNIT-V 8h First Aid General Medical Emergencies Preoperative precautions in ocular surgeries Psychiatry: Basic knowledge of psychiatric condition and Patient Management Genetics - Introduction to genetics - Organization of the cell - Chromosome structure and cell division											
14. Instructions for students - Before coming in the class please read about general pharmacology. - All students should be able to know the anatomy and physiology of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.											
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA											
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)									
a) SDG: 3		1. Weak 2. Moderate 3. High ✓									
b) SDG: NA		1. Weak 2. Moderate 3. High									
17. Title of Lab Manual (if applicable): Not applicable											
18. Books Recommended: Reference Books: - 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, 19th Ed., ELBS/Churchill Livingstone. (PPM), 2002 - Basic and clinical Science course: Update on General Medicine, American Academy of Ophthalmology, Section 1, 1999 E-Book: NA Reference websites: NA											
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA											
Experiential Learning Component <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 10%;">Sr. No.</th> <th style="width: 20%;">Topic</th> <th style="width: 50%;">Submissions/Assessment</th> <th style="width: 20%;">COs covered</th> </tr> <tr> <td style="text-align: center;">1.</td> <td style="text-align: center;">Unit 1</td> <td>MSE, ESE and Continuous Evaluation</td> <td>COBOP3710.1</td> </tr> </table>				Sr. No.	Topic	Submissions/Assessment	COs covered	1.	Unit 1	MSE, ESE and Continuous Evaluation	COBOP3710.1
Sr. No.	Topic	Submissions/Assessment	COs covered								
1.	Unit 1	MSE, ESE and Continuous Evaluation	COBOP3710.1								

2.	Unit 2	MSE, ESE and Continuous Evaluation	COBOP3710.2
3.	Unit 3	MSE, ESE and Continuous Evaluation	COBOP3710.3, COBOP3710.4
4.	Unit 4	MSE, ESE and Continuous Evaluation	COBOP3710.5
5.	Unit 5	MSE, ESE and Continuous Evaluation	COBOP3710.6

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (3-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3710.1	2		2	2	2	1	1	2		2	3	1	1	
COBOP3710.2	2		2	2	2	1	1	2		2	3	1	1	
COBOP3710.3	2		2	2	2	1	1	2		2	3	1	1	
COBOP3710.4	2		2	2	2	1	1	2		2	3	1	1	
COBOP3710.5	2		2	2	2	1	1	2		2	3	1	1	

COBOP3710.6	2		2	2	2	1	1	2		2	3	1	1	
Average	2		2	2	2	1	1	2		2	3	1	1	

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3901: BASICS OF RESEARCH METHODOLOGY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry Semester: V	BOP 3901	4-0-0	4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name)			
NA			
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ n Both Semester ☐			
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development ☒ Basic Knowledge ☐			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: Unit-I: Meaning of research, objectives of research, Motivation in research, Criteria for good research, Concepts of Scientific Research: Nature, Definition and Steps of Scientific research; Objectivity and Subjectivity in Scientific research, Types of research, Research methods vs methodology, Review of literature, Ethical issues in conducting research. Unit-II: Concept of researchable problem - research prioritization, Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem, Introduction to research design, Features of a good research design, Experimental and Nonexperimental research design, Research Process Unit-III: Types of Data, Collection of primary data, collection data through questionnaires & schedules, Measurement scales, its classification, Important scaling techniques, Sampling techniques: Need for sampling, Criteria for good samples, Procedures of sampling and sampling designs errors, Probability sampling design, Non-probability sampling design, Determination of sample size Unit-IV: Meaning and Characteristics of statistics, Importance of the study of statistics, Branches of statistics, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, Ogive Curve, Measures of Central Tendency, Mean, Mode & Median, Need for measure of dispersion, range, average deviation, variance and standard deviation, Basic concepts concerning testing of hypothesis, Basic principle of ANOVA. Unit-V: Report generation, report writing, and APA format – Title page, Abstract, Introduction, Methodology, Results, Discussion, References, and Appendices, Universal procedures for preparation of bibliography			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 60	Tutorials: Nil	Practical's: Nil	
12. Course Outcomes (COs)			
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			

COBOP3901.1	Understand the need of research in vision science and to understand the basic concept of research methods which includes basic errors in research, data collection methods and formulation of research question.
COBOP3901.2	Identify & Interpret different research study designs used in research and application of different sampling methods and understanding of biological variability
COBOP3901.3	Apply and calculate fundamental statistical concepts of sensitivity and specificity and formulation of questionnaire
COBOP3901.4	Create a research proposal after clear understanding of existing literature and research gap.
COBOP3901.5	Appraise and to have a fairly good knowledge about the central tendencies and dispersion and successfully able to calculate descriptive statistics using manual and digital method
13. UNIT WISE DETAILS	No. of Units: 05
Unit Number: 1	No. of Lectures: 6 Title: Introduction to Research Methodology
Content Summary: Meaning of research, objectives of research, Motivation in research, Criteria for good research, Concepts of Scientific Research: Nature, Definition and Steps of Scientific research; Objectivity and Subjectivity in Scientific research, Types of research, Research methods vs methodology, Review of literature, Ethical issues in conducting research.	
Unit Number: 2	No. of Lectures: 6 Title: Research Problem, Design and Process
Content Summary: Concept of researchable problem - research prioritization, Statement of research problem, Statement of purpose and objectives of research problem, Necessity of defining the problem, Introduction to research design, Features of a good research design, Experimental and Nonexperimental research design, Research Process.	
Unit Number: 3	No. of Lectures: 6 Title: Methods of Data Collection, Scaling and Sampling Techniques
Content Summary: Types of Data, Collection of primary data, collection data through questionnaires & schedules, Measurement scales, its classification, Important scaling techniques, Sampling techniques: Need for sampling, Criteria for good samples, Procedures of sampling and sampling designs errors, Probability sampling design, Non-probability sampling design, Determination of sample size	
Unit Number: 4	No. of Lectures: 6 Title: Data Analysis: Use of Statistics & Computer in Scientific Research
Content Summary: Meaning and Characteristics of statistics, Importance of the study of statistics, Branches of statistics, Parameters and Estimates, Descriptive and inferential statistics, Variables and their types, Tabulation of Data: Basic principles of graphical representation, Types of diagrams – histograms, frequency polygons, Ogive Curve, Measures of Central Tendency, Mean, Mode & Median, Need for measure of dispersion, range, average deviation, variance and standard deviation, Basic concepts concerning testing of hypothesis, Basic principle of ANOVA.	
Unit Number: 5	No. of Lectures: 6 Title: Scientific Documentation: Report Writing
Content Summary: Report generation, report writing, and APA format – Title page, Abstract, Introduction, Methodology, Results, Discussion, References, and Appendices, Universal procedures for preparation of bibliography	
14. Instructions for students • Before coming in the class please read about general anatomy and physiology • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	

16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3	1. Weak	2. Moderate	3. High ✓
b) SDG: 17	1. Weak	2. Moderate ✓	3. High
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: - Research Methodology : Kothari - Methods in Biostatistics by B.KMahajan - Probability and Statistics byMurray - Research Methodology by SM Israni Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Introduction to Research Methodology	MSE, ESE and Continuous Evaluation	COBOP3901.1
2.	Research Problem, Design and Process	MSE, ESE and Continuous Evaluation	COBOP3901.2, COBOP3901.3
3.	Methods of Data Collection, Scaling and Sampling Techniques	MSE, ESE and Continuous Evaluation	COBOP3901.4
4.	Use of Statistics & Computer in Scientific Research	MSE, ESE and Continuous Evaluation	COBOP3901.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (4-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
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Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3901.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3901.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3901.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3901.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3901.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP 3503 CLINICAL OPTOMETRY IV AND SUMMER TRAINING EVALUATION II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP3503	0-0-8	4	
Semester: V				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
BOP 2505 CLINICAL OPTOMETRY-III				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
The course provides students the opportunity to continue to develop confidence and increased skill in diagnosis and treatment delivery. Students demonstrate competence in basic, intermediate and advance procedure in those areas. Students will participate in advance and specialized diagnosis and management procedure. Hands-on experience under supervision will be provided in various outreach programmes namely, school vision screening, glaucoma and diabetic retinopathy screening etc., Students also get hand-on practical sessions on the following courses namely, contact lens, low vision care, binocular vision.				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 120
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3503.1	Test for objective, and subjective refraction and interpret the results			
COBOP3503.2	Analyze condition using Torch Light Examination (TLE) of the eye, pupillary evaluation, and photo stress test and interpret the results			
COBOP3503.3	Test for Slit lamp bio-microscopy for evaluating the integrity of the anterior segment of the eye, Intra-Ocular Pressure, and document the findings			
COBOP3503.4	Perform tests to assess the tear function and lacrimal system			
COBOP3503.5	Test using direct and indirect ophthalmoscopy for evaluating the posterior segment of the eye and document the findings			
13. UNIT WISE DETAILS		No. of Units: 01		
The course provides students the opportunity to continue to develop confidence and increased skill in diagnosis and treatment delivery. Students will demonstrate competence in basic, intermediate and advance procedure in those areas. Students will participate in advance and specialized diagnostic and management procedure. Hands-on experience under supervision will be provided in various outreach programmes namely, school vision screening, glaucoma and diabetic retinopathy screening etc., Students also get hand-on practical sessions on the following courses namely, contact lens, low vision care, binocular vision.				
14. Instructions for students				
Before coming in the class please read about general pharmacology.				

- All students should be able to know the anatomy and physiology of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: NA E-Book: NA Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit 1	MSE, ESE and Continuous Evaluation	COBOP3503.1, COBOP3503.2, COBOP3503.3, COBOP3503.4, COBOP3503.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-8)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and

		End Semester Practical/Case Report Including Viva-Voce - External	50%	40% in External Component
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RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3503.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3503.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3503.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3503.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3503.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

Semester VI

BOP 3105: CONTACT LENS II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 5.5 Program Name: Bachelor of Optometry Semester: VI	3. Course Code BOP 3105	4. L-T-P 3-0-2	5. Credits 4
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) BOP3101 Contact Lens I			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development ☒ Basic Knowledge ☒			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: Unit-I: SCL Materials & Review of manufacturing techniques, Comparison of RGP vs. SCL, Pre-fitting considerations for SCL Unit-II Fitting philosophies for SCL, Fit assessment in Soft Contact Lenses: Types of fit – Steep, Flat, Optimum, Calculation and finalizing SCL parameters, Disposable lenses, Advantages and availability Unit-III Soft Toric CL, Stabilization techniques, Parameter selection, Fitting assessment, Common Handling Instructions, Insertion & Removal Techniques, Do's and Don'ts Unit-IV Care and Maintenance of Soft lenses, cleaning agents & Importance, rinsing agents & Importance, disinfecting agents & importance, Lubricating & Enzymatic cleaners, Follow up visit examination, Complications of Soft lenses Unit-V Therapeutic contact lenses, Indications, fitting consideration, Specialty fitting, Aphakia, Pediatric, Post refractive surgery, Management of Presbyopia with Contact lenses			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 45	Tutorials: Nil	Practical's: 30	
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP3105.1	Understand the basics of contact lenses		
COBOP3105.2	List the important properties of contact lenses		
COBOP3105.3	Finalise the CL design for various kinds of patients		

COBOP3105.4	Recognize various types of fitting
COBOP3105.5	Explain all the procedures to patient
COBOP3105.6	Identify and manage the adverse effects of contact lens
13. UNIT WISE DETAILS	No. of Units: 05
Unit Number: 1	No. of Lectures: 7 Title: SCL materials and properties
Content Summary: SCL Materials & Review of manufacturing techniques, Comparison of RGP vs. SCL, Pre-fitting considerations for SCL	
Unit Number: 2	No. of Lectures: 7 Title: SCL fitting
Content Summary: Fitting philosophies for SCL, Fit assessment in Soft Contact Lenses: Types of fit – Steep, Flat, Optimum, Calculation and finalizing SCL parameters, Disposable lenses, Advantages and availability	
Unit Number: 3	No. of Lectures: 7 Title: SCL toric fitting
Content Summary: Soft Toric CL, Stabilization techniques, Parameter selection, Fitting assessment, Common Handling Instructions, Insertion & Removal Techniques, Do's and Don'ts	
Unit Number: 4	No. of Lectures: 7 Title: Care and maintenance
Content Summary: Care and Maintenance of Soft lenses, cleaning agents & Importance, rinsing agents & Importance, disinfecting agents & importance, Lubricating & Enzymatic cleaners, Follow up visit examination, Complications of Soft lenses	
Unit Number: 5	No. of Lectures: 8 Title: Specialty contact lens fitting
Content Summary: Therapeutic contact lenses, Indications, Fitting consideration, Specialty fitting, Aphakia, Pediatric, Post refractive surgery, Management of Presbyopia with Contact lenses	
Practical • Examination of old soft Lens, • RGP Lens fitting, RGP Lens Fit Assessment and fluorescein pattern, • Special RGP fitting (Aphakia, pseudo phakia & Keratoconus), • RGP over refraction and Lens flexure, • Examination of old RGP Lens, • RGP Lens parameters, • Fitting Cosmetic Contact Lens, • Slit lamp examination of Contact Lens wearers, • Fitting Toric Contact Lens, • Bandage Contact Lens, • SPM & Pachymetry at SN During Clinics, • Specialty Contact Lens fitting.	
14. Instructions for students • Before coming in the class please read about general pharmacology. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not)	

Yes No ✓ Describe (if yes): NA				
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3 b) SDG: NA		1. Weak 2. Moderate 3. High ✓ 1. Weak 2. Moderate 3. High		
17. Title of Lab Manual (if applicable): Not applicable				
18. Books Recommended: Reference Books: - IACLE modules 1 - 10 - 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 Reference websites: NA				
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA				
Experiential Learning Component				
Sr. No.	Topic	Submissions/Assessment	COs covered	
1.	SCL materials and properties	MSE, ESE and Continuous Evaluation	COBOP3105.1	
2.	SCL fitting	MSE, ESE and Continuous Evaluation	COBOP3105.2	
3.	SCL toric fitting	MSE, ESE and Continuous Evaluation	COBOP3105.3	
4.	Care and maintenance	MSE, ESE and Continuous Evaluation	COBOP3105.4	
5.	Specialty contact lens fitting	MSE, ESE and Continuous Evaluation	COBOP3105.5, COBOP3105.6	
Activities for Differential learning Needs				
Sr. No.	Learning Level	Activities	Assessment	
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva	
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva	
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks	
Evaluation Scheme				
S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz -	20%	

		Internal		
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3105.1	3	3	3	3	3	3	3	3	3	3	3	3	3	2
COBOP3105.2	3	3	3	3	3	3	3	3	3	3	3	3	3	2
COBOP3105.3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
COBOP3105.4	3	3	3	3	3	3	3	3	3	3	3	3	3	2
COBOP3105.5	3	3	3	3	3	3	3	3	3	3	3	3	3	2
COBOP3105.6	3	3	3	3	3	3	3	3	3	3	3	3	3	2
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	2

Level of Mapping/correlation

- 3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

BOP 3106: BINOCULAR VISION II

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5 Program Name: Bachelor of Optometry Semester: VI	3. Course Code BOP 3106	4. L-T-P 3-0-2	5. Credits 4	
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name) BOP3104 Binocular Vision I				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development ☒ Basic Knowledge ☒				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus: Unit-I: Neuro-muscular anomalies: Classification and etiological factors, History – recording and significance Unit-II Convergent strabismus: Accommodative convergent squint: Classification, Investigation and Management, Classification, Investigation and Management, non-accommodative Convergent squint Divergent Strabismus: Classification, A& V phenomenon, Investigation and Management, Vertical strabismus, Classification, Investigation and Management, Paralytic Strabismus, Acquired and Congenital, Clinical Characteristics Unit-III Distinction from combatant and restrictive Squint: Investigations History and symptoms, Head Posture, Diplopia Charting, Hess chart, PBCT, Nine directions, Binocular field of vision Unit-IV Amblyopia and Treatment of Amblyopia: Nystagmus: Surgical management and Non-surgical Management of Squint Unit-V Restrictive Strabismus: Features, Musculo-fascial anomalies, Duane's Retraction syndrome, Clinical features and management, Brown's Superior oblique sheath syndrome, Strabismus fixus, Congenital muscle fibrosis				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 45		Tutorials: Nil		Practical's: 30
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3106.1	Outline the gross anatomy and physiology of extra ocular muscles and crystalline lens			
COBOP3106.2	Provide a detailed explanation of, and differentiate between the etiology, investigation and management of binocular vision anomalies.			
COBOP3106.3	Independently investigate and diagnose case of strabismus with comments in respect to retinal correspondence and binocular single vision			

COBOP3106.4	Perform all the investigations to check retinal correspondence, state of Binocular Single Vision, angle of deviation and special investigations for paralytic strabismus.
COBOP3106.5	Adapt skills to document and interpret the results of various binocular vision assessment tests
13. UNIT WISE DETAILS	
No. of Units: 05	
Unit Number: 1	No. of Lectures: 7 Title: Neuro muscular anomalies
Content Summary: Neuro-muscular anomalies: Classification and etiological factors, History – recording and significance	
Unit Number: 2	No. of Lectures: 7 Title: Manifest Squint
Content Summary: Convergent strabismus: Accommodative convergent squint: Classification, Investigation and Management, Classification, Investigation and Management, non-accommodative Convergent squint Divergent Strabismus: Classification, A& V phenomenon, Investigation and Management, Vertical strabismus, Classification, Investigation and Management, Paralytic Strabismus, Acquired and Congenital, Clinical Characteristics	
Unit Number: 3	No. of Lectures: 7 Title: Comitant and non comitant squint
Content Summary: Distinction from combatant and restrictive Squint: Investigations History and symptoms, Head Posture, Diplopia Charting, Hess chart, PBCT, Nine directions, Binocular field of vision	
Unit Number: 4	No. of Lectures: 8 Title: Amblyopia
Content Summary: Amblyopia and Treatment of Amblyopia: Nystagmus: Surgical management and Non-surgical Management of Squint	
Unit Number: 5	No. of Lectures: 8 Title: Restrictive strabismus
Content Summary: Restrictive Strabismus: Features, Musculo-fascial anomalies, Duane's Retraction syndrome, Clinical features and management, Brown's Superior oblique sheath syndrome, Strabismus fixus, Congenital muscle fibrosis	
Practical Deals with hand-on session the basic binocular vision evaluation techniques.	
14. Instructions for students - Before coming in the class please read about general pharmacology. - All students should be able to know the anatomy and physiology of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate 3. High ✓
b) SDG: NA	1. Weak 2. Moderate 3. High

17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books: • 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 Norden: BURIAN- VON NOORDEN'S Binocular vision and ocular motility theory and management of strabismus, Missouri, Second edition, 1980, C. V. Mosby Company • Mitchell Scheiman; Bruce Wick: Clinical Management of Binocular Vision Heterophoric, Accommodative, and Eye Movement Disorders, 2008, Lippincot Williams & Wilkins publishers Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Neuro muscular anomalies	MSE, ESE and Continuous Evaluation	COBOP3106.1
2.	Manifest Squint	MSE, ESE and Continuous Evaluation	COBOP3106.2
3.	Comitant and non comitant squint	MSE, ESE and Continuous Evaluation	COBOP3106.3
4.	Amblyopia	MSE, ESE and Continuous Evaluation	COBOP3106.4
5.	Restrictive strabismus	MSE, ESE and Continuous Evaluation	COBOP3106.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory+ Practical (3-0-2)	Mid Semester Exam (MSE) - Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		Lab Work - External	15%	
		End term Exam (ETE) – External	45%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent

Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3106.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3106.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3106.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3106.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3106.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3506: RESEARCH PROJECT-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3506	0-0-4	2	
Semester: VI				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability ☒ Entrepreneurship Skill Development Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: 15		Practical's: 30
11. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3506.1	Apply various research methods & designs			
COBOP3506.2	Perform clinical and research data collection & its analysis and interpretation			
COBOP3506.3	Identifying the gaps in the literature			
COBOP3506.4	Identifying the research question			
COBOP3506.5	Construct a final report based on research findings			
12. UNIT WISE DETAILS				
No. of Units: 01				
Students will prepare the protocol during this semester after doing extensive literature search. Each student will be reporting to guide/supervisor who helps the student to go about in systematically. Research proposal need to be presented in front of the experts before going ahead with data collection. In institute which has Institute research board and ethics committee student can be encouraged to present the proposal to the board.				
13. Instructions for students				
• Before coming in the class please read about optometry. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.				
14. Multi-Disciplinary Approach				
(Please mentioned whether this course is multidisciplinary or not)				

Yes No ✓			
Describe (if yes):			
NA			
15. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3	1. Weak 2. Moderate 3. High ✓		
b) SDG: NA	1. Weak 2. Moderate 3. High		
16. Title of Lab Manual (if applicable): Not applicable			
17. Books Recommended: Reference Books: NA Reference websites: ● Pubmed Search ● Google Scholar ● Scopus ● Cochrane Library			
18. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Submissions/Assessment	COs covered	
1.	MSE, ESE and Continuous Evaluation	COBOP3506.1, COBOP3506.2, COBOP3506.3, COBOP3506.4, COBOP3506.5	
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-4)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:
 (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3506.1	2	1	2	2			2	2	2	3	3		2	2
COBOP3506.2	2	1	2	2			2	2	2	3	3		2	2
COBOP3506.3	2	1	2	2			2	2	2	3	3		2	2
COBOP3506.4	2	1	2	2			2	2	2	3	3		2	2
COBOP3506.5	2	1	2	2			2	2	2	3	3		2	2
Average	2	1	2	2			2	2	2	3	3		2	2

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3505: CLINICAL OPTOMETRY V AND COMMUNITY CARE

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3505	0-0-8	4	
Semester: VI				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
BOP3501 Clinical optometry-IV				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability ☒ Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: NA				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 48
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3505.1	Test for objective, and subjective refraction and interpret the results			
COBOP3505.2	Analyze condition using Torch Light Examination (TLE) of the eye, pupillary evaluation, and photo stress test and interpret the results			
COBOP3505.3	Test for Slit lamp bio-microscopy for evaluating the integrity of the anterior segment of the eye, Intra-Ocular Pressure, and document the findings			
COBOP3505.4	Perform tests to assess the tear function and lacrimal system			
COBOP3505.5	Test using direct and indirect ophthalmoscopy for evaluating the posterior segment of the eye and document the findings			
13. UNIT WISE DETAILS		No. of Units: 01		
14. Instructions for students				
• Before coming in the class please read about optometry. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.				
15. Multi-Disciplinary Approach				
(Please mentioned whether this course is multidisciplinary or not)				
Yes No				

Describe (if yes): NA				
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)		
a) SDG: 3		1. Weak 2. Moderate 3. High ✓		
b) SDG: NA		1. Weak 2. Moderate 3. High		
17. Title of Lab Manual (if applicable): Not applicable				
18. Books Recommended: Reference Books: - Kumar, V., Abbas, A. K., Aster, J. C., & Robbins, S. L. (Eds.). (2021). Robbins Basic Pathology (10th ed.). Elsevier. - Cotran, R. S., Kumar, V., & Collins, T. (Eds.). (2021). Robbins and Cotran Pathologic Basis of Disease (10th ed.). Elsevier. - Rubin, E., & Reisner, H. M. (Eds.). (2021). Rubin's Pathology: Clinicopathologic Foundations of Medicine (8th ed.). Wolters Kluwer. - Mitchell, R. N., & Kumar, V. (Eds.). (2021). Pocket Companion to Robbins and Cotran Pathologic Basis of Disease (10th ed.). Elsevier. - Abbas, A. K., & Lichtman, A. H. (Eds.). (2020). Basic Immunology: Functions and Disorders of the Immune System (6th ed.). Elsevier. Reference websites: NA				
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA				
Experiential Learning Component				
Sr. No.	Submissions/Assessment		COs covered	
1.	MSE, ESE and Continuous Evaluation		COBOP3505.1, COBOP3505.2, COBOP3502.5, COBOP3505.3, COBOP3502.5, COBOP3505.5	
Activities for Differential learning Needs				
Sr. No.	Learning Level	Activities	Assessment	
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva	
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva	
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks	
Evaluation Scheme				
S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-8)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3505.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3505.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3505.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3505.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3505.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3712: PUBLIC HEALTH & COMMUNITY OPTOMETRY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3712	2-0-0	3	
Semester: VI				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Public Health Optometry: Concepts and implementation, Stages of diseases, Dimensions, determinants and indicators of health, Levels of disease prevention and levels of health care patterns, Epidemiology of blindness – Defining blindness and visual impairment Unit-II Eye in primary health care, Contrasting between Clinical and community health programs, Community Eye Care Programs, Community based rehabilitation programs. Unit-III Nutritional Blindness with reference to Vitamin A deficiency, Vision 2020: The Right to Sight, Screening for eye diseases, National and International health agencies, NPCB Unit-IV Role of an optometrist in Public Health, Organization and Management of Eye Care Programs – Service, Delivery models, Health manpower and planning & Health Economics, Evaluation and assessment of health programmes Unit-V Optometrists' role in school eye health programmes, Basics of Tele Optometry and its application in Public Health, Information, Education and Communication for Eye Care programs.				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 30		Tutorials: Nil		Practical's: Nil
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3712.1	Apprise Community based eye care activities in India and globally and Understand Epidemiology of various eye diseases and their optometric management.			
COBOP3712.2	To develop Information Education Communication (IEC) materials on eye and vision care increasing awareness.			

COBOP3712.3	To initiate and actively participate in screening for various eye diseases in the community and to develop Eye health education programmes in the community		
COBOP3712.4	Develop sensitization towards public health perspective of eye diseases.		
13. UNIT WISE DETAILS		No. of Units: 05	
Unit Number: 1	No. of Lectures: 7	Title: Public Health Optometry	
Content Summary: Public Health Optometry: Concepts and implementation, Stages of diseases, Dimensions, determinants and indicators of health, Levels of disease prevention and levels of health care patterns, Epidemiology of blindness – Defining blindness and visual impairment			
Unit Number: 2	No. of Lectures: 7	Title: Community eye care	
Content Summary: Eye in primary health care, Contrasting between Clinical and community health programs, Community Eye Care Programs, Community based rehabilitation programs.			
Unit Number: 3	No. of Lectures: 7	Title: Eye Screening	
Content Summary: Nutritional Blindness with reference to Vitamin A deficiency, Vision 2020: The Right to Sight, Screening for eye diseases, National and International health agencies, NPCB			
Unit Number: 4	No. of Lectures: 8	Title: Eye care delivery models	
Content Summary: Role of an optometrist in Public Health, Organization and Management of Eye Care Programs – Service, Delivery models, Health manpower and planning & Health Economics, Evaluation and assessment of health programmes			
Unit Number: 5	No. of Lectures: 8	Title: School eye health programmes	
Content Summary: Optometrists' role in school eye health programmes, Basics of Tele Optometry and its application in Public Health, Information, Education and Communication for Eye Care programs.			
14. Instructions for students • Before coming in the class please read about general pharmacology. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			

18. Books Recommended:**Reference Books:**

- GVS Murthy, S K Gupta, D Bachani: The principles and practice of community Ophthalmology, National programme for control of blindness, New Delhi, 2002
- Newcomb RD, Jolley JL: Public Health and Community Optometry, Charles C Thomas Publisher, Illinois, 1980
- K Park: Park's Text Book of Preventive and Social Medicine, 19th edition.

Reference websites: NA**19. E-Learning Resources: NA****NPTEL: NA****Animated Lab Videos: NA****MOOC Supplemented: NA****Experiential Learning Component**

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Public Health Optometry	MSE, ESE and Continuous Evaluation	COBOP3712.1
2.	Community eye care	MSE, ESE and Continuous Evaluation	COBOP3712.2
3.	Eye Screening	MSE, ESE and Continuous Evaluation	COBOP3712.2
4.	Eye care delivery models	MSE, ESE and Continuous Evaluation	COBOP3712.3
5.	School eye health programmes	MSE, ESE and Continuous Evaluation	COBOP3712.4

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3712.1	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3712.2	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3712.3	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3712.4	3	2	1	2	3	3	2	3	3	3	3	3	3	3
Average	3	2	1	2	3	3	2	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3713: OCCUPATIONAL OPTOMETRY

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 5.5 Program Name: Bachelor of Optometry Semester: VI	3. Course Code BOP 3713	4. L-T-P 2-0-0	5. Credits 3
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC		
7. Prerequisite(s), if any (Mention course code and name) NA			
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester			
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies	
11. Brief Syllabus: Unit-I: Introduction to Occupational health, hygiene and safety, international bodies like ILO, WHO, National bodies etc. Acts and Rules - Factories Act, WCA, ESI Act, Electromagnetic Radiation and its effects on Eye Unit-II Light – Definitions and units, Sources, advantages and disadvantages, standards, Colour – Definition, Colour theory, Colour coding, Colour defects, Colour Vision tests Unit-III Occupational hazards and preventive/protective methods, Task Analysis Unit-IV Industrial Vision Screening – Modified clinical method and Industrial Vision test, Vision Standards – Railways, Roadways, Airlines Unit-V Visual Display Units, Contact lens and work			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: 30		Tutorials: Nil	Practical's: Nil
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP3713.1	Summarize and define the visual requirements of jobs		
COBOP3713.2	Define the effects of physical, chemical and other hazards on eye and vision		
COBOP3713.3	Identify occupational causes of visual and eye problems		
COBOP3713.4	Decide and prescribe suitable corrective lenses and eye protective wear		
COBOP3713.5	Define visual requirements, standards for different jobs.		

13. UNIT WISE DETAILS		No. of Units: 05	
Unit Number: 1 No. of Lectures: 7			
Content Summary: Introduction to Occupational health, hygiene and safety, international bodies like ILO, WHO, National bodies etc. Acts and Rules - Factories Act, WCA, ESI Act, Electromagnetic Radiation and its effects on Eye			
Unit Number: 2 No. of Lectures: 7			
Content Summary: Light – Definitions and units, Sources, advantages and disadvantages, standards, Colour – Definition, Colour theory, Colour coding, Colour defects, Colour Vision tests			
Unit Number: 3 No. of Lectures: 7			
Content Summary: Occupational hazards and preventive/protective methods, Task Analysis			
Unit Number: 4 No. of Lectures: 8			
Content Summary: Industrial Vision Screening – Modified clinical method and Industrial Vision test, Vision Standards – Railways, Roadways, Airlines			
Unit Number: 5 No. of Lectures: 8			
Content Summary: Visual Display Units, Contact lens and work			
14. Instructions for students • Before coming in the class please read about optometry. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books:			

- GVS Murthy, S K Gupta, D Bachani: The principles and practice of community Ophthalmology, National programme for control of blindness, New Delhi, 2002 - Newcomb RD, Jolley JL: Public Health and Community Optometry, Charles C Thomas Publisher, Illinois, 1980 - K Park: Park's Text Book of Preventive and Social Medicine, 19th edition. Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP3713.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP3713.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP3713.3
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP3713.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP3713.5
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE +	50-70%	70-90%	>90%

class assignment)			
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3713.1	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3713.2	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3713.3	3	2	1	2	3	3	2	3	3	3	3	3	3	3
COBOP3713.4	3	2	1	2	3	3	2	3	3	3	3	3	3	3
Average	3	2	1	2	3	3	2	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP 3705: PRACTICE MANAGEMENT

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrf Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 3705	2-0-0	3	
Semester: VI				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus: Unit-I: Practice establishment and development Stock control and costing Staffing and staff relations Business computerization Unit-II: Sources of finance Bookkeeping and cash flow Taxation and taxation planning Unit-III: Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality Personal values- ethical or moral values Attitude and behaviour- professional behaviour, treating people equally Code of conduct, professional accountability and responsibility, misconduct Differences between professions and importance of team efforts Cultural issues in the healthcare environment				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 45		Tutorials: Nil		Practical's: Nil
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3705.1	Understand principles of practice management in optometry.			
COBOP3705.2	Learn to create a business plan for optometry practice.			
COBOP3705.3	Understand technology in optometry practice management.			
COBOP3705.4	Learn effective human resource management skills.			

COBOP3705.5	Develop a strategic plan for growing an optometry practice.		
COBOP3705.6	Understand legal and ethical issues in optometry practice management.		
13. UNIT WISE DETAILS	No. of Units: 03		
Unit Number: 1 No. of Lectures: 8 Title: Business Management			
Content Summary: Practice establishment and development Stock control and costing Staffing and staff relations Business computerization			
Unit Number: 2 No. of Lectures: 8 Title: Accounting Principles			
Content Summary: Sources of finance Bookkeeping and cash flow Taxation and taxation planning			
Unit Number: 3 No. of Lectures: 8 Title: Professionalism and Values			
Content Summary: Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality Personal values- ethical or moral values Attitude and behaviour- professional behaviour, treating people equally Code of conduct, professional accountability and responsibility, misconduct Differences between professions and importance of team efforts Cultural issues in the healthcare environment			
14. Instructions for students • Before coming in the class please read about optometry. • All students should be able to know the anatomy and physiology of the eye • All student must secure at least 50% marks in each evaluation component. • All students must maintain the attendance at least 80%. • All student must submit a project either in group or single.			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: NA		1. Weak 2. Moderate 3. High	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: Reference Books:			

- GVS Murthy, S K Gupta, D Bachani: The principles and practice of community Ophthalmology, National programme for control of blindness, New Delhi, 2002 - Newcomb RD, Jolley JL: Public Health and Community Optometry, Charles C Thomas Publisher, Illinois, 1980 - K Park: Park's Text Book of Preventive and Social Medicine, 19th edition. Reference websites: NA			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Business Management	MSE, ESE and Continuous Evaluation	COBOP3705.1, COBOP3705.2
2.	Accounting Principles	MSE, ESE and Continuous Evaluation	COBOP3705.3, COBOP3705.4
3.	Professionalism and Values	MSE, ESE and Continuous Evaluation	COBOP3705.5, COBOP3705.6
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Theory (2-0-0)	Mid Semester Exam (MSE) – Internal	20%	Must Secure 40% Marks in Internal Component and 40% in External Component
		Continuous Evaluation Through Class Tests/Practice/Assignments/Presentation/Quiz - Internal	20%	
		End term Exam (ETE) – External	60%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3705.1		2	3	2	1		3		3		3		3	3
COBOP3705.2		2	3	2	1		3		3		3		3	3
COBOP3705.3		2	3	2	1		3		3		3		3	3
COBOP3705.4		2	3	2	1		3		3		3		3	3
COBOP3705.5		2	3	2	1		3		3		3		3	3
COBOP3705.5		2	3	2	1		3		3		3		3	3
Average		2	3	2	1		3		3		3		3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP3507: MYOPIA CONTROL WORKSHOP

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 5.5		3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry Semester: VI		BOP3507	0-0-4	2
6. Type of Course (Tick one):		Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name) -NA				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☐ Entrepreneurship ☐ Skill Development ☒ Basic Knowledge ☐				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☐ Problem solving methodologies		
11. Brief Syllabus: UNIT 1 : - Prevalence of myopia - Need for myopia control - Risk factors - Role of Binocular Vision in myopia control - Review, Orthokeratology, Soft bifocal contact lens, Atropine, Gas-permeable contact lenses, Bifocal spectacles, Multifocal spectacles - Recent advances and review of literature - Case discussion - Orthokeratology: guidelines, principles, fitting procedures and cases				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: 0		Tutorials: 0		Practical's: 60
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP3507.1	Develop a comprehensive understanding of the prevalence of myopia, exploring global trends, demographic variations, and associated factors contributing to the increasing prevalence of myopia in different populations.			
COBOP3507.2	Recognize the significance of myopia control and its impact on visual health.			
COBOP3507.3	Acquire the skills to identify and assess various risk factors associated with myopia development and progression			
COBOP3507.4	Gain proficiency in various myopia control methods, including ortho-keratology, soft bifocal contact lenses,			

	atropine use, gas-permeable contact lenses, bifocal spectacles, and multi-focal spectacles.		
COBOP3507.5	Understand the role of binocular vision anomalies in myopia progression and control, including accommodative lag, convergence insufficiency, and their impact on myopia management strategies.		
13. UNIT WISE DETAILS		No. of Units: ____4____	
Unit Number: 1			
Content Summary: - Prevalence of myopia - Need for myopia control - Risk factors - Role of Binocular Vision in myopia control - Review, Orthokeratology, Soft bifocal contact lens, Atropine, Gas-permeable contact lenses, Bifocal spectacles, Multifocal spectacles - Recent advances and review of literature - Case discussion - Orthokeratology: guidelines, principles , fitting procedures and cases			
14. Instructions for students: (Write the step-wise instructions for the students) a) Before coming in the class please read about the topics covered and the next topic to be taught. b) Please read about the basics the topic included in syllabus. c) All student must secure at least 40% marks in each evaluation component d) All students must maintain the attendance at least 75%. e) All student must submit a project and give class test either in group or single (as suggested)			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....3.....		1. Weak 2. Moderate 3. High ✓	
b) SDG.....4.....		1. Weak 2. Moderate 3. High ✓	
Books Recommended: . Reference Books: E-Book: NA Reference websites: NA			
17. E-Learning Resources NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered

1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP3507.1, COBOP3507.2, COBOP3507.3
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Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme:

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-4)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:

(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Preliminary study	Relevant cases	New techniques applied
Class Test	Normal content/topics	Elaboration with proof of the content	Latest Research contents with proof of the content
Project/ Assignments	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	40-70%	70-90%	>90%
External Evaluation (ETE)	40-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3507.1	3		3	3	3	3	3	3	3	3	3	3	3	3
COBOP3507.2	3		3	3	3	3	3	3	3	3	3	3	3	3
COBOP3507.3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	0.6	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

- 3- Indicates Highest Correlation
 2-Indicates Moderate Correlation
 1-Indicate-Lowest Correlation

BOP3509: NEURO-OPTOMETRY & BRAIN INJURY REHABILITATION WORKSHOP

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 5.5	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP3509	0-0-4	2	
Semester: VI				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name) -NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
Unit 1: Introduction to Neuro-Optometry - Anatomy and physiology of the visual system and brain connection - Common neuro-ophthalmic disorders affecting vision Unit 2: Visual Dysfunction in Brain Injury - Oculomotor dysfunction (saccades, pursuits, vergence issues) - Visual field loss and hemianopia - Post-concussion visual syndrome Unit 3: Clinical Evaluation Techniques - Assessment of accommodation, convergence, and eye movement disorders - Visual field testing and neuro-ophthalmic imaging				

- Cognitive and perceptual vision assessment Unit 4: Neuro-Optometric Rehabilitation Strategies - Vision therapy techniques for neurological conditions - Prism therapy and yoked prism applications - Role of tinted lenses and filters in neuro-optometric care Unit 5: Case-Based Learning & Multidisciplinary Approach - Case discussions on stroke and TBI rehabilitation - Integrating neuro-optometry into rehabilitation teams - Future trends in neuro-optometric care		
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)		
Lectures: 0	Tutorials: 0	Practical's: 60
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:		
COBOP3509.1	Identify visual impairments associated with brain injuries and neurological disorders.	
COBOP3509.2	Perform clinical assessments for oculomotor dysfunction, visual field loss, and visual processing deficits.	
COBOP3509.3	Develop individualized vision therapy and rehabilitation plans for neuro-optometric patients.	
COBOP3509.4	Collaborate with neurologists, physiotherapists, and occupational therapists in rehabilitation programs.	
COBOP3509.5	Utilize advanced neuro-optometric tools and technologies for diagnosis and treatment.	
13. UNIT WISE DETAILS		No. of Units: ____5____
Unit Number: 1		
Content Summary: Unit 1: Introduction to Neuro-Optometry - Anatomy and physiology of the visual system and brain connection - Common neuro-ophthalmic disorders affecting vision Unit 2: Visual Dysfunction in Brain Injury - Oculomotor dysfunction (saccades, pursuits, vergence issues) - Visual field loss and hemianopia - Post-concussion visual syndrome Unit 3: Clinical Evaluation Techniques - Assessment of accommodation, convergence, and eye movement disorders - Visual field testing and neuro-ophthalmic imaging - Cognitive and perceptual vision assessment Unit 4: Neuro-Optometric Rehabilitation Strategies - Vision therapy techniques for neurological conditions - Prism therapy and yoked prism applications - Role of tinted lenses and filters in neuro-optometric care		

Unit 5: Case-Based Learning & Multidisciplinary Approach - Case discussions on stroke and TBI rehabilitation - Integrating neuro-optometry into rehabilitation teams - Future trends in neuro-optometric care			
14. Instructions for students: (Write the step-wise instructions for the students) f) Before coming in the class please read about the topics covered and the next topic to be taught. g) Please read about the basics the topic included in syllabus. h) All student must secure at least 40% marks in each evaluation component i) All students must maintain the attendance at least 75%. j) All student must submit a project and give class test either in group or single (as suggested)			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG.....3.....		1. Weak 2. Moderate 3. High ✓	
b) SDG.....4.....		1. Weak 2. Moderate 3. High ✓	
Books Recommended: . Reference Books: E-Book: NA Reference websites: NA			
17. E-Learning Resources NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP3509.1
2.	Unit II	MSE, ESE and Continuous Evaluation	COBOP3509.2
3.	Unit III	MSE, ESE and Continuous Evaluation	COBOP3509.3
4.	Unit IV	MSE, ESE and Continuous Evaluation	COBOP3509.4
5.	Unit V	MSE, ESE and Continuous Evaluation	COBOP3509.5

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva

3	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks
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Evaluation Scheme:

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-4)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Case Study	Preliminary study	Relevant cases	New techniques applied
Class Test	Normal content/topics	Elaboration with proof of the content	Latest Research contents with proof of the content
Project/ Assignments	Plagiarism more than 20%	Plagiarism 10- 20%	Plagiarism less than 10%
Internal evaluation (MSE + class assignment)	40-70%	70-90%	>90%
External Evaluation (ETE)	40-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP3598.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3598.2	3		3	3	3	3	3	3	3	3	3	3	3	3
COBOP3509.3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
COBOP3509.4				3	3	3	3	3	3	3	3		3	3
COBOP3509.5	3	2	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	0.6	3	3	3	3	3	3	3	3	3	3	3	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

Semester VII

BOP4503 INTERNSHIP-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrf Level: 6 Program Name: Bachelor of Optometry Semester: VII	3. Course Code BOP 4503	4. L-T-P 0-0-32	5. Credits 16
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐		
7. Prerequisite(s), if any (Mention course code and name) NA			
8. Frequency of offering (check one): Odd ☒ Even ☐ Any Semester ☐ Both Semester ☐			
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development ☒ Basic Knowledge ☐			
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies	
11. Brief Syllabus: The internship time period provides the students the opportunity to continue to develop confidence and increased skill in diagnosis and management. Students will demonstrate competence in beginning, intermediate, and advanced procedures in above areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting. Internship's postings can be in the following locations: Eye Hospitals, Eye clinics in general hospital, independent eye clinics, Optometric clinics in eye hospitals, general hospitals or optical showrooms, optical showrooms and other relevant locations wherein the learning objective can be achieved. Short period of training to eye care (instruments, optical, contact lens) related manufacturing setups, corporates and nongovernmental organizations.			
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)			
Lectures: Nil		Tutorials: Nil	Practical's: 480
12. Course Outcomes (COs) Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:			
COBOP4503.1	Determine a detailed history using effective communication skills		
COBOP4503.2	Select appropriate examination procedures for all retina and glaucoma patients		
COBOP4503.3	Examine the eye health and visual status of patients effectively		
COBOP4503.4	Minimize or avoid the adverse effects of eye and vision problems through early identification, education, treatment, and prevention		
COBOP4503.5	Explain and educate patients, parents/caregivers, and other health care providers about the importance and frequency of routine retina and vision examinations		
COBOP4503.6	Take the decision to use appropriate ocular drugs diagnostically and to aid refraction and fundus examination in consultation with an Ophthalmologist		

13. UNIT WISE DETAILS		No. of Units: 01	
14. Instructions for students - An approximate of guided 756 hours needs to be completed in this semester. The students will be by rotation go to community clinics, Campus clinics, and associated hospital and optical / optometric clinics. - The logbook has to be maintained on ophthalmic techniques and procedures in the semester with complete understanding of the instrumentation are mandatory for submission at the end of the semester - The procedures tasked each day needs to be signed by the supervisor during every visit. No case record will be considered without the supervisor's signature - Weekly submission of the log book to the faculty is mandatory			
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA			
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)		SDG level of correlation (Mention the level of correlation for each SDG)	
a) SDG: 3		1. Weak 2. Moderate 3. High ✓	
b) SDG: 4		1. Weak 2. Moderate 3. High ✓	
17. Title of Lab Manual (if applicable): Not applicable			
18. Books Recommended: 1. A K Khurana Ophthalmology 2. Jack J Kanski Edition 8th Reference websites: 1. https://www.keeler.co.uk/blog/post/retinoscopy-procedure-beginners-guide https://eyewiki.aao.org/Slit_Lamp_Examination			
19. E-Learning Resources: NA NPTEL: NA Animated Lab Videos: NA MOOC Supplemented: Certificate program in Clinical Optometry https://iamopto.com/course/None/16			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	LogBook	MSE, ESE and Continuous Evaluation	COBOP4503.1, COBOP4503.2, COBOP4503.3, COBOP4503.4, COBOP4503.5, COBOP4503.6
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-32)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:**(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

	Clinical Excellence	Communication	Independent Practice	Collaborative Healthcare	Ophthalmic Diagnosis & Treatment	Practical Knowledge	Entrepreneurship & Leadership	Primary & Preventive Healthcare	Ethical responsibility	Research & Innovation	Life-long Learning	Practical Skills	Career Opportunities	Leadership Skills
CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP4503.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4503.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4503.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4503.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4503.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4503.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

*Level of Mapping/correlation**3- Indicates Highest Correlation**2-Indicates Moderate Correlation**1-Indicate-Lowest Correlation*

BOP4504 RESEARCH PROJECT-I

1. Department/ School:	SCHOOL OF HEALTHCARE AND ALLIED SCIENCES			
2. NCrF Level: 6	3. Course Code	4. L-T-P	5. Credits	
Program Name: Bachelor of Optometry	BOP 4504	0-0-24	12	
Semester: VII				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd ☒ Even Any Semester Both Semester				
9. Focus: Employability Entrepreneurship ☒ Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
Team of students will be doing a research project under the guidance of a supervisor (who could be optometrists/vision scientists/ ophthalmologist)				
Student will get the experience of doing research in systematic approach – identifying the primary question, literature search, identifying the gaps in the literature, identifying the research question, writing up the research proposal, data collection, data analysis, thesis writing and presentation.				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 360
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP4504.1	Systematically conduct a literature search, analyze data, and critically interpret interim findings relevant to their research.			
COBOP4504.2	Demonstrate the ability to write and compile a comprehensive thesis, adhering to academic and research standards, while optionally preparing a manuscript for journal publication.			
COBOP4504.3	Effectively present their research to a panel of experts and submit a final dissertation in both hard copy and presentation formats, showcasing their research proficiency.			
13. UNIT WISE DETAILS No. of Units: 07				
Unit-I: Literature Search:				
1. Techniques for identifying, sourcing, and reviewing relevant literature.				
2. Tools and databases for literature search.				
3. Organizing and synthesizing research papers for background and rationale.				
Unit-II: Data Analysis:				
1. Overview of statistical tools and software for analyzing research data.				
2. Steps in data cleaning, descriptive analysis, and inferential statistics.				
3. Practical exercises in analyzing sample data.				

Unit-III: Interim Analysis: 1. Understanding the purpose and importance of interim analyses. 2. How to interpret and incorporate interim findings into ongoing research. 3. Presenting interim results to supervisors and stakeholders.	
Unit-IV: Thesis Write-Up: 1. Structuring the thesis: introduction, methodology, results, discussion, and conclusion. 2. Formatting, citations, and adhering to institutional guidelines. 3. Revision and proofreading strategies.	
Unit-V: Presentation of Research Work: 1. Preparing a PowerPoint presentation of the thesis. 2. Techniques for effective public speaking and defending research in front of experts. 2. Handling questions and feedback from the research committee.	
Unit-VI: Manuscript Write-Up (Optional): 1. Structuring a research manuscript for journal submission. 2. Understanding submission guidelines for peer-reviewed journals. 3. Revising and resubmitting based on journal feedback.	
Unit-VII: Dissertation Submission: 1. Guidelines for formatting and submitting the dissertation in hard copy. 2. Final PowerPoint presentation and oral defense of the thesis work. 3. Submission deadlines and protocol for the final presentation and defense.	
14. Instructions for students - Before coming in the class please read about optometry. - All students should be able to know the anatomy and physiology of the eye - All student must secure at least 50% marks in each evaluation component. - All students must maintain the attendance at least 80%. - All student must submit a project either in group or single.	
15. Multi-Disciplinary Approach (Please mentioned whether this course is multidisciplinary or not) Yes No ✓ Describe (if yes): NA	
16. SDG Number (Mention SDGs number out of 17 SDGs for which this course is mapping)	SDG level of correlation (Mention the level of correlation for each SDG)
a) SDG: 3	1. Weak 2. Moderate 3. High ✓
b) SDG: 17	1. Weak 2. Moderate ✓ 3. High
17. Title of Lab Manual (if applicable): Not applicable	
18. Books Recommended: NA. Reference websites: NA	
18. E-Learning Resources:	

Thesis writing: The T H E S I S approach (English edition) ebook : Mahajan, Rajiv, Singh, tejinder: Amazon.nl: Kindle Store (no date) Thesis Writing: The T H E S I S Approach (English Edition) eBook : Mahajan, Rajiv, Singh, Tejinder: Amazon.nl: Kindle Store. Available at: <https://www.amazon.nl/Thesis-Writing-Approach-Rajiv-Mahajan-ebook/dp/B0BDLFNRX7> (Accessed: 31 May 2024).

NPTEL: NA

Animated Lab Videos: NA

MOOC Supplemented: NA

Experiential Learning Component

Sr. No.	Topic	Submissions/Assessment	COs covered
1.	Unit I	MSE, ESE and Continuous Evaluation	COBOP4504.1, COBOP4504.2, COBOP4504.3,

Activities for Differential learning Needs

Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-24)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION: (At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP4504.1			1	3			3		3	3	3			
COBOP4504.2			1	3			3		3	3	3			
COBOP4504.3	3	2	1	3	3	3	3	2	3	3	3	3	3	3
Average	1	0.66	1	3	1	1	3	0.66	3	3	3	1	1	1

Level of Mapping/correlation

3- Indicates Highest Correlation
2-Indicates Moderate Correlation
1-Indicate-Lowest Correlation

Semester VIII

BOP4505 INTERNSHIP-II

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 6		3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry		BOP 4505	0-0-32	16
Semester: VIII				
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective ☐ Open Elective ☐ VAC ☐			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd ☐ Even ☒ Any Semester ☐ Both Semester ☐				
9. Focus: Employability ☒ Entrepreneurship ☒ Skill Development ☒ Basic Knowledge ☐				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning ☐ Participative Learning ☒ Problem solving methodologies		
11. Brief Syllabus:				
The internship time period provides the students the opportunity to continue to develop confidence and increased skill in diagnosis and management. Students will demonstrate competence in beginning, intermediate, and advanced procedures in above areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting. Internship's postings can be in the following locations: Eye Hospitals, Eye clinics in general hospital, independent eye clinics, Optometric clinics in eye hospitals, general hospitals or optical showrooms, optical showrooms and other relevant locations wherein the learning objective can be achieved. Short period of training to eye care (instruments, optical, contact lens) related manufacturing setups, corporates and nongovernmental organizations.				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 480
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP4505.1	Demonstrate proficiency in examining the eye and conducting various eye procedures, showcasing the application of theoretical knowledge in a clinical setting.			
COBOP4505.2	Apply their knowledge to clinically manage eye conditions, integrating theoretical concepts with practical skills to ensure comprehensive patient care.			
COBOP4505.3	Actively engage in clinical rotations at community clinics, campus clinics, associated hospitals, and optical/optometric clinics, applying their skills in diverse settings and evaluating the effectiveness of different clinical environments.			
COBOP4505.4	Develop effective documentation skills by maintaining a logbook and case sheets for each patient encounter, ensuring completeness in management and follow-up details.			
COBOP4505.5	Actively collaborate with supervisors during clinical visits, seeking guidance and feedback, and ensuring that the logbook is signed by the supervisor during every visit for proper evaluation.			

COBOP4505.6	Synthesize their clinical experiences, logbook entries, and case sheets, demonstrating professionalism by adhering to mandatory submission requirements and ensuring compliance with supervisor approvals.	
13. UNIT WISE DETAILS		
		No. of Units: 04
Unit-1 Ocular Disease Management		06 Hours
In-depth study of common ocular diseases and conditions. Advanced diagnostic techniques for ocular disease detection. Practical sessions on managing and co-managing patients with ocular diseases. Case studies and discussions on treatment protocols.		
Unit- 2: Contact Lens Specialty		06 Hours
Comprehensive study of contact lens types, materials, and designs. Fitting and evaluation of specialty contact lenses, including scleral lenses. Hands-on sessions for contact lens fitting and troubles hooting. Management of complications and advanced contact lens-related issues.		
Unit-3: Low Vision Rehabilitation		06 Hours
Understanding the impact of visual impairment on daily living. Evaluation and prescription of low vision aids and assistive technologies. Practical sessions on conducting low vision assessments. Rehabilitation strategies for individuals with low vision.		
Unit-4: Binocular Vision and Vision Therapy		06 Hours
Advanced study of binocular vision disorders and anomalies. Diagnostic techniques for assessing binocular vision function. Practical experience in designing and implementing vision therapy programs. Case studies on the management of binocular vision disorders.		
Instructions for students		
- An approximate of guided 756 hours needs to be completed in this semester. The students will be by rotation go to community clinics, Campus clinics, and associated hospital and optical / optometric clinics. - The logbook has to be maintained on ophthalmic techniques and procedures in the semester with complete understanding of the instrumentation are mandatory for submission at the end of the semester - The procedures tasked each day needs to be signed by the supervisor during every visit. No case record will be considered without the supervisor's signature - Weekly submission of the log book to the faculty is mandatory		
14. Multi-Disciplinary Approach		
(Please mentioned whether this course is multidisciplinary or not)		
Yes No ✓		
Describe (if yes):		
NA		
15. SDG Number	SDG level of correlation	
(Mention SDGs number out of 17 SDGs for which this course is mapping)	(Mention the level of correlation for each SDG)	
a) SDG: 3	1. Weak 2. Moderate 3. High ✓	
b) SDG: 4	1. Weak 2. Moderate 3. High ✓	
16. Title of Lab Manual (if applicable):		
Not applicable		
17. Books Recommended:		
3. A K Khurana Ophthalmology		
4. Jack J Kanski Edition 8th		
Reference websites:		
3. https://www.keeler.co.uk/blog/post/retinoscopy-procedure-beginners-guide		
https://eyewiki.aao.org/Slit_Lamp_Examination		

18. E-Learning Resources: NA			
NPTEL: NA			
Animated Lab Videos: NA			
MOOC Supplemented: Certificate program in Clinical Optometry https://iamopto.com/course/None/16			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
1.	LogBook	MSE, ESE and Continuous Evaluation	COBOP4505.1, COBOP4505.2, COBOP4505.3, COBOP4505.4, COBOP4505.5, COBOP4505.6
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
1.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
2.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
3.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1	Practical/Practice or for The Courses of (0-0-32)	Regular Practical/Practice & LogBook - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical/Case Report Including Viva-Voce - External	50%	

**RUBRIC FOR EVALUATION:
(At least 5 Criteria)**

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP4505.1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4505.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4505.3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

COBOP4505.4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4505.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3
COBOP4505.6	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation

BOP4506 RESEARCH PROJECT-II

1. Department/ School:		SCHOOL OF HEALTHCARE AND ALLIED SCIENCES		
2. NCrF Level: 6		3. Course Code	4. L-T-P	5. Credits
Program Name: Bachelor of Optometry Semester: VIII		BOP 4506	0-0-24	12
6. Type of Course (Tick one):	Programme Core ☒ Programme Elective Open Elective VAC			
7. Prerequisite(s), if any (Mention course code and name)				
NA				
8. Frequency of offering (check one): Odd Even ☒ Any Semester Both Semester				
9. Focus: Employability Entrepreneurship ☒ Skill Development ☒ Basic Knowledge				
10. Student centric methods used for enhancing learning experiences (Tick relevant)		☒ Experiential learning Participative Learning Problem solving methodologies		
11. Brief Syllabus:				
Team of students will be doing a research project under the guidance of a supervisor (who could be optometrists/vision scientists/ ophthalmologist) Student will get the experience of doing research in systematic approach – identifying the primary question, literature search, identifying the gaps in the literature, identifying the research question, writing up the research proposal, data collection, data analysis, thesis writing and presentation.				
Total lecture, Tutorial and Practical Hours for this course (Take 15 teaching weeks per semester)				
Lectures: Nil		Tutorials: Nil		Practical's: 360
12. Course Outcomes (COs)				
Possible usefulness of this course after its completion i.e., how this course will be practically useful to the students once it is completed:				
COBOP4506.1	Systematically conduct a literature search, analyze data, and critically interpret interim findings relevant to their research.			
COBOP4506.2	Demonstrate the ability to write and compile a comprehensive thesis, adhering to academic and research standards, while optionally preparing a manuscript for journal publication.			
COBOP4506.3	Effectively present their research to a panel of experts and submit a final dissertation in both hard copy and presentation formats, showcasing their research proficiency.			
13. UNIT WISE DETAILS		No. of Units: 07		
Unit-I: Literature Search:				
1. Techniques for identifying, sourcing, and reviewing relevant literature. 2. Tools and databases for literature search. 3. Organizing and synthesizing research papers for background and rationale.				
Unit-II: Data Analysis:				
1. Overview of statistical tools and software for analyzing research data. 2. Steps in data cleaning, descriptive analysis, and inferential statistics. 3. Practical exercises in analyzing sample data.				

Unit-III: Interim Analysis:

1. Understanding the purpose and importance of interim analyses.
2. How to interpret and incorporate interim findings into ongoing research.
3. Presenting interim results to supervisors and stakeholders.

Unit-IV: Thesis Write-Up:

1. Structuring the thesis: introduction, methodology, results, discussion, and conclusion.
2. Formatting, citations, and adhering to institutional guidelines.
3. Revision and proofreading strategies.

Unit-V: Presentation of Research Work:

1. Preparing a PowerPoint presentation of the thesis.
2. Techniques for effective public speaking and defending research in front of experts.
4. Handling questions and feedback from the research committee.

Unit-VI: Manuscript Write-Up (Optional):

1. Structuring a research manuscript for journal submission.
2. Understanding submission guidelines for peer-reviewed journals.
3. Revising and resubmitting based on journal feedback.

Unit-VII: Dissertation Submission:

1. Guidelines for formatting and submitting the dissertation in hard copy.
2. Final PowerPoint presentation and oral defense of the thesis work.
3. Submission deadlines and protocol for the final presentation and defense.

14. Instructions for students

- Before coming in the class please read about optometry.
- All students should be able to know the anatomy and physiology of the eye
- All student must secure at least 50% marks in each evaluation component.
- All students must maintain the attendance at least 80%.
- All student must submit a project either in group or single.

15. Multi-Disciplinary Approach

(Please mentioned whether this course is multidisciplinary or not)

Yes No ✓

Describe (if yes):

NA

16. SDG Number

(Mention SDGs number out of 17 SDGs for which this course is mapping)

SDG level of correlation

(Mention the level of correlation for each SDG)

a) SDG: 3

1. Weak 2. Moderate 3. High ✓

b) SDG: 17

1. Weak 2. Moderate ✓ 3. High

17. Title of Lab Manual (if applicable):

Not applicable

18. Books Recommended: NA.			
Reference websites: NA			
19. E-Learning Resources:			
Thesis writing: The T H E S I S approach (English edition) ebook : Mahajan, Rajiv, Singh, tejinder: Amazon.nl: Kindle Store (no date) Thesis Writing: The T H E S I S Approach (English Edition) eBook : Mahajan, Rajiv, Singh, Tejinder: Amazon.nl: Kindle Store. Available at: https://www.amazon.nl/Thesis-Writing-Approach-Rajiv-Mahajan-ebook/dp/B0BDLFNRX7 (Accessed: 31 May 2024).			
NPTEL: NA			
Animated Lab Videos: NA			
MOOC Supplemented: NA			
Experiential Learning Component			
Sr. No.	Topic	Submissions/Assessment	COs covered
2.	Unit I	MSE, ESE and Continuous Evaluation	COBOP4506.1, COBOP4506.2, COBOP4506.3,
Activities for Differential learning Needs			
Sr. No.	Learning Level	Activities	Assessment
4.	Slow learners	Extra classes, assignment, one to one interaction, guest lectures	Assignment, MSE, Test, viva
5.	Intermediate learners	Skill training, Journal club activities, guest lectures	Test, feedback, viva
6.	Advanced Learners	VAC courses, skill training	Presentation, viva, feedbacks

Evaluation Scheme

S. No.	TYPE OF COURSE	PARTICULAR	ALLOTTED RANGE OF MARKS	PASS CRITERIA
1.	Practical (0-0-24)	Regular Practical & Report Writing - Internal	50%	Must Secure 40% Marks in Internal Component and 40% in External Component
		End Semester Practical Including Viva-Voce - External	50%	

RUBRIC FOR EVALUATION:
(At least 5 Criteria)

Criteria	Developing Level (1 mark)	Competent Level (2 marks)	Exemplary Level (3 marks)
Critical Thinking	Good	Average	Excellent
Learning Skill	Slow learner	Moderate learner	Advance learner
Assignment	Descriptive	Descriptive + Illustrative	Descriptive + Illustrative + recent developments
Internal evaluation (MSE + class assignment)	50-70%	70-90%	>90%
External Evaluation (ETE)	50-70%	70-90%	>90%

Mapping of CO-PO and CO-PSO:

CO Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
COBOP4506.1			1	3			3		3	3	3			
COBOP4506.2			1	3			3		3	3	3			

COBOP4506.3	3	2	1	3	3	3	3	2	3	3	3	3	3	3
Average	1	0.66	1	3	1	1	3	0.66	3	3	3	1	1	1

Level of Mapping/correlation

3- Indicates Highest Correlation

2-Indicates Moderate Correlation

1-Indicate-Lowest Correlation