

M.S. Ramaiah University of Applied Sciences

New BEL Road, MSR Nagar, Bangalore – 560054



**RAMAIAH
UNIVERSITY**
OF APPLIED SCIENCES

PO, PSO, PEO & CO

Programme: B.Sc. (Hons) in Optometry (OPT)

Programme Code: 404

Programme Outcome (PO)

Programme Specific Outcome (PSO)

Program Educational Objectives (PEO)

Course Outcomes (CO)

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Faculty of Life and Allied Health Sciences (FLAHS)

Programme Name: B.Sc. (Hons) in Optometry (OPT)

Programme Outcomes (POs)

At the completion of this program, the student should –

- PO-1. Clinical care:** Appraise on the evidence-based practice in Optometry and construct appropriate care regime
- PO-2. Communication:** Discuss the diagnosis and justify the options with the patient, and negotiate appropriate treatment plans in a sensitive manner that is in the patient and society's best interests
- PO-3. Membership of a multidisciplinary health team:** Discuss and communicate with and summarize relevant information to, other stakeholders including members of the healthcare team
- PO-4. Ethics and accountability at all levels:** Describe and apply the basic concepts of clinical ethics to actual cases and situations
- PO-5. Commitment to professional excellence:** Demonstrate respect for each patient's individual rights of autonomy, privacy, and confidentiality
- PO-6. Leadership and mentorship:** Develop leadership in quality improvement and eye care service delivery to enhance the wellbeing of the society and enriched healthcare experience
- PO-7. Social accountability and responsibility:** Assess the eye care determinants at the local, regional and national level and build care modality as per the requirement
- PO-8. Lifelong learning:** Evaluate the need and prioritize lifelong learning as an important outcome across the professional career

Programme Specific Outcomes (PSOs)

At the end of the BSc (Hons) Optometry Programme the graduate will be able to:

- PSO-1:** Apply the knowledge in optics, instrumentation, visual psychophysics to develop innovative and safe solutions to challenges in optometry
- PSO-2:** Adapt to technological advancement in instrumentation and diagnostics by upgrading to the latest design processes in optometry
- PSO-3:** Demonstrate the leadership qualities and strive for the betterment of organization, Environment, and society
- PSO-4:** Demonstrate an understanding of the importance of life-long learning through professional Development, practical training, and specialized certifications



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Programme Education Objectives

- PEO-1:** Provide students with a strong foundation in optometry, to enable them to devise and deliver effective solutions to challenging ocular problems
- PEO-2:** Impart technical skills required to develop innovative solutions as per industry and societal requirements in optometry
- PEO-3:** Impart the required managerial and entrepreneurial skills to enable students to contribute to the eyecare needs of the society
- PEO-4:** Instill human values, social, interpersonal and leadership skills required for professional success in evolving as global professionals

Course Outcomes (COs)

Course Title & Code: General Anatomy (19AHG101A)

Upon completion of this course students will be able to:

- CO-1.** Describe the structure and functional organization of a basic human cell and the normal anatomical positions and planes of the body
- CO-2.** Explain the structure and functions of basic tissues
- CO-3.** Explain the components of the organ systems and its basic functions
- CO-4.** Identify the parts of a compound microscope and differentiate microscopy of basic tissues
- CO-5.** Demonstrate the parts and position of bones in the human body and early development of fetus
- CO-6.** Demonstrate the surface anatomy of structures and interpret data obtained from various imaging techniques.

Course Outcomes (COs)

Course Title & Code: General Physiology (19AHG102A)

Upon completion of this course students will be able to:

- CO-1.** Describe the functions of the organ systems in the body
- CO-2.** Explain the mechanisms for the execution of these functions for homeostasis through the secretions of chemical and humoral factors
- CO-3.** Explain the regulatory mechanisms in the control of blood pressure, urine formation maintenance of extracellular and intracellular volume
- CO-4.** Perform to assess the normal values and parameters of the bodily function indicators such as blood indices, blood gases
- CO-5.** Demonstrate the tests to assess the functional integrity of the respiratory and cardiovascular system
- CO-6.** Correlate the disease condition with physiological aspects of bodily functions



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Course Outcomes (COs)

Course Title & Code: Health Care Delivery Systems of India (19AHG103A)

Upon completion of this course students will be able to:

- CO-1. Describe the Health Care delivery system in India at primary, secondary and tertiary level and identify their role in the health care team
- CO-2. Explain the AYUSH system of medicine
- CO-3. Explain the National Health programmes in terms of operation, achievements and constraints
- CO-4. Explain the importance of Demography and Vital statistics in planning health policy
- CO-5. Discuss role of epidemiology and epidemiological methods in health

Course Outcomes (COs)

Course Title & Code: General & Ocular Microbiology (19AHG107A)

Upon completion of this course students will be able to:

- CO-1. Describe the morphology, physiology and characteristics of microorganisms
- CO-2. Describe the principles and practice of sterilization and disinfection
- CO-3. Discuss immunology, and immunity
- CO-4. Demonstrate sterilization procedures and use of sterilization equipment
- CO-5. Demonstrate Collection and transport of specimens to the laboratory

Course Outcomes (COs)

Course Title & Code: Ocular Anatomy (22OPTXXX)

Upon completion of this course students will be able to:

- CO-1. Describe the basic structure, relations and components of the human eye
- CO-2. Describe the connections between the various parts of the central nervous system and the eye so as to understand the neural connections and distribution
- CO-3. Describe the basic principles of ocular embryology
- CO-4. Describe the orbital structures

Course Outcomes (COs)

Course Title & Code: Geometrical Optics (19OPT101A)

Upon completion of this course students will be able to:

- CO-1. Explain the basic concepts in reflection, refraction, and scattering of light
- CO-2. Describe concepts in mirrors, lenses
- CO-3. Describe basic properties of image formation by lenses
- CO-4. Conduct experiments as per the standard procedures and tabulate the measured values
- CO-5. Calculate the required parameters and plot the results
- CO-6. Interpret, compare with standard results and draw conclusions



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Course Outcomes (COs)

Course Title & Code: General Biochemistry (19AHG111A)

Upon completion of this course students will be able to:

- CO-1. Describe the various laboratory apparatus used, the steps in specimen collection and safety measurements to be taken in biochemistry laboratory
- CO-2. Explain different models of atomic structure, acids, bases, buffers and disturbances in acid base balance
- CO-3. Explain quality control, precision, specificity, sensitivity when conducting special investigations
- CO-4. Demonstrate qualitative and quantitative estimations of various analyses (urine, blood)
- CO-5. Interpret the various biochemical parameters in health and disease

Course Outcomes (COs)

Course Title & Code: General Pharmacology (19AHG112A)

Upon completion of this course students will be able to:

- CO-1. Describe pharmacokinetic principles in relation to drug administration
- CO-2. Explain the concept of pharmacodynamics in relation to drug utilization in therapeutics
- CO-3. Explain the concept of chemotherapy in relation to infectious diseases
- CO-4. Explain the importance of adverse effects in therapeutics of various drug usage
- CO-5. Identify drugs dosage forms and posology in management of diseases and calculate doses in various age groups
- CO-6. Interpret the importance of drug combinations with reference to therapeutic index and drug utilization

Course Outcomes (COs)

Course Title & Code: Concepts of Hospital Infection Prevention (19AHGXXX)

Upon completion of this course students will be able to:

- CO-1. Explain the steps involved in infection prevention and control
- CO-2. Understand the working and application of CSSD
- CO-3. Explain the importance of antibiotic resistance in the patient care and ways to prevent it
- CO-4. Apply the concepts of biomedical waste management to ensure clean and hazard free hospital environment

Course Outcomes (COs)

Course Title & Code: General & Ocular Pathology (19AHG114A)

Upon completion of this course students will be able to:

- CO-1. Describe basic facts and concepts of pathology


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- CO-2. Explain fundamental aspects of hematology and blood banking
- CO-3. Explain the various clinical pathology tests
- CO-4. Perform laboratory tests related to hematology and clinical pathology
- CO-5. Interpret the results of laboratory tests
- CO-6. Apply concepts of general pathology to understand pathological basis of disease

Course Outcomes (COs)

Course Title & Code: Ocular Physiology & Biochemistry (22OPTXXX)

Upon completion of this course students will be able to:

- CO-1. Describe the normal functioning of all structures of the eye and their interactions
- CO-2. Elucidate the physiological aspects of normal growth and development of the eye
- CO-3. Explain the phenomenon of vision
- CO-4. Demonstrate knowledge and understanding on metabolic processes taking place in different ocular structures
- CO-5. Describe in a general outline the nature and functions of selected biomolecules involved as structural elements in eye tissues
- CO-6. Describe the maintenance of ocular transparency

Course Outcomes (COs)

Course Title & Code: Physical Optics (19OPT113A)

Upon completion of this course students will be able to:

- CO-1. Describe the nature of light and its sources
- CO-2. Elucidate the relationship between amplitude and intensity
- CO-3. Explain the principles and theory of lasers
- CO-4. Explain various units of light measurement and describe the laws of photometry
- CO-5. Demonstrate birefringence using Calcite crystals and measure the resolving power of telescopes
- CO-6. Determine the Gratings

Course Outcomes (COs)

Course Title & Code: Ocular Pharmacology (19OPT216A)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the basic principle of pharmacokinetics & Pharmacodynamics
- CO-2. List the commonly used ocular drugs
- CO-3. Describe the mechanism of action of the drugs
- CO-4. List the indications and contraindications of drugs
- CO-5. Discuss about the drug dosage and adverse effects
- CO-6. Describe the drugs commonly used in ophthalmology


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Course Outcomes (COs)

Course Title & Code: Visual optics 1 (19OPT204A)

After the successful completion of this course, the student will be able to:

- CO-1. Understand the fundamentals of optical components of the eye
- CO-2. Describe Principle of Retinoscopy
- CO-3. Demonstrate the theoretical knowledge of the optical components of the eye
- CO-4. Describe the role of aberration in the eye
- CO-5. Explain schematic eye and its uses

Course Outcomes (COs)

Course Title & Code: Optometric optics 1 (19OPT205A)

After the successful completion of this course, the student will be able to:

- CO-1. Demonstrate the understanding of spectacle lenses and ophthalmic prisms
- CO-2. Classify lens materials and characteristics
- CO-3. Perform lens power measurement, centration and transposition
- CO-4. Analyze various designs and forms of lenses
- CO-5. Apply lens design concepts for different occupations

Course Outcomes (COs)

Course Title & Code: Ocular diseases 1 (19OPT207A)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the applied anatomy of the orbit in context of developmental and acquired anomalies
- CO-2. Describe the applied anatomy of the lid with specific reference to developmental and acquired Anomalies
- CO-3. Explain the lacrimal system and the diseases affecting it
- CO-4. Discuss the corneal applied anatomy and pathological conditions affecting conjunctiva
- CO-5. Describe the inflammatory, degenerative, diseases affecting cornea

Course Outcomes (COs)

Course Title & Code: Optometric instruments I

After the successful completion of this course, the student will be able to:

- CO-1. Able to demonstrate knowledge on the optical principle and instrumentation used in eye care



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- CO-2. Describe the construction, design and applications of these devices
- CO-3. Compare and contrast the use of instruments for screening and diagnostic purposes
- CO-4. Able to analyze and appraise the instruments which will help in clinical decision making
- CO-5. Able to interpret the results and identify common eye diseases

Course Outcomes (COs)

Course Title & Code: Clinical Optometry 1 (22OPTXXX)

After the successful completion of this course, the student will be able to:

- CO-1. Identify common eye diseases
- CO-2. Illustrate on the optical principle and instrumentation of anterior segment
- CO-3. Perform basic tests/examinations for anterior eye segment
- CO-4. Interpret the test findings

Course Outcomes (COs)

Course Title & Code: Entrepreneurship Development (22MCM201A)

After the successful completion of this course, the student will be able to:

- CO-1. Discuss the concepts and process of entrepreneurship
- CO-2. Construct and apply the idea generation techniques
- CO-3. Examine the opportunities for launching of new venture and various entry strategies
- CO-4. Acquire the skills for creation and management of entrepreneurial venture
- CO-5. Present a viable business plan, for business success

Course Outcomes (COs)

Course Title & Code: Optometric optics II (19OPT212A)

After the successful completion of this course, the student will be able to:

- CO-1. Identify and describe various lens materials and its characteristics
- CO-2. Identify various lens designs and types of ophthalmic lenses
- CO-3. Compute surface powers and decide appropriate tool for lens surfacing
- CO-4. Describe and identify various types of Spectacle frames
- CO-5. Able to dispense and fit spectacle lenses


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Course Outcomes (COs)

Course Title & Code: Visual optics 2 (19OPT213A)

After the successful completion of this course, the student will be able to:

- CO-1. Assess range and amplitude of accommodation
- CO-2. Describe and perform cycloplegic refraction
- CO-3. Explain and perform static & dynamic retinoscopy
- CO-4. Explain the basis of Radical retinoscopy and near retinoscopy and perform the procedure
- CO-5. Perform binocular balancing
- CO6: Describe How to calculate Effective Power & Magnification

Course Outcomes (COs)

Course Title & Code: Ocular diseases 2 (19OPT214A)

After the successful completion of this course, the student will be able to:

- CO-1. Describe the applied anatomy of Congenital and Developmental Disorders of the eye parts
- CO-2. Describe the inflammatory and infectious conditions affecting posterior segment
- CO-3. Describe the ocular injuries and their management
- CO-4. Describe types of cataract, investigations and management of them
- CO-5. Explain the clinical aspects of Neuro –ophthalmic conditions
- CO6: Explain the symptoms, investigations and management of Glaucoma

Course Outcomes (COs)

Course Title & Code: Optometric instruments II (22OPTXXX)

After the successful completion of this course, the student will be able to:

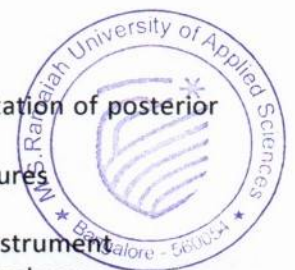
- CO-1. Demonstrate knowledge on the optical principle and instrumentation used in eye care
- CO-2. Describe the construction, design and applications of these devices
- CO-3. Compare and contrast the use of instruments for screening and diagnostic purposes
- CO-4. Analyze and appraise the instruments which will help in clinical decision making
- CO-5. Interpret the results and identify common eye diseases

Course Outcomes (COs)

Course Title & Code: Clinical Optometry 2 (22OPTXXX)

After the successful completion of this course, the student will be able to:

- CO-1. Able to demonstrate knowledge on the optical principle and instrumentation of posterior segment
- CO-2. Understand purpose, indications and contraindications of clinical procedures
- CO-3. Able to perform basic tests/examinations for posterior eye segment
- CO-4. Describe the need for clinical examination and choose the appropriate instrument
- CO-5. Perform test, document and interpret the findings of various clinical procedures



Course Outcomes (COs)

Course Title & Code: Constitution of India, Medical Law and Ethics (19AHG302A)

After undergoing this course students will be able to:

- CO-1. Explain the key principles of the Indian Constitution
- CO-2. Explain the medico-legal aspects of patient care including informed consent
- CO-3. Discuss euthanasia, organ donation, the organ transplant act and care of terminally ill patient
- CO-4. Discuss the scope and application of Medical Law
- CO-5. Suggest strategies for protection of human rights and resolving legal issues in compliance with applicable laws

Course Outcomes (COs)

Course Title & Code: Nutrition (19AHG109A)

After the successful completion of this course, the student will be able to:

- CO-1. Define the concepts of balanced diet and its importance
- CO-2. Discuss the functions of food and diet based disorders
- CO-3. Brief about RDA and its role in diet planning
- CO-4. Explain the functions of carbohydrates, proteins and lipids
- CO-5. Elaborate on the importance of assessing nutritional status
- CO-6. Describe the role of nutrition in ocular health

Course Outcomes (COs)

Course Title & Code: Contact lens I (19OPT301A)

After the successful completion of this course, the student will be able to:

- CO-1. Understand the basics of RGP contact lenses
- CO-2. Enumerate different types of RGP contact lenses and their designs
- CO-3. Recognize various types of fitting & troubleshoot
- CO-4. Able to fit RGP contact lens on the patient cornea
- CO-5. Explain all the care & maintenance procedures to patient

Course Outcomes (COs)

Course Title & Code: Pediatric Optometry and Binocular Vision I (19OPTXXX)

After the successful completion of this course, the student will be able to:

- CO-1. Demonstrate clinical decision-making ability in the management of pediatric patient
- CO-2. Perform optometric examination for pediatric patient
- CO-3. Identify different types of binocular vision anomalies
- CO-4. Investigate the presence of any sensory and motor adaptations



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Course Outcomes (COs)

Course Title & Code: Low vision and Geriatric Optometry (22OPTXXX)

After undergoing this course students will be able to:

- CO-1. Define low vision and its epidemiology
- CO-2. Describe the causes of low vision & clinical examination
- CO-3. Appraise on training modalities with low vision devices
- CO-4. Demonstrate clinical decision-making ability for geriatric

Course Outcomes (COs)

Course Title & Code: Clinical Optometry 3 (22OPTXXX)

After the successful completion of this course, the student will be able to:

- CO-1. Perform all types of soft contact lenses fitting
- CO-2. Assess soft contact lens fitting and understand different troubleshoot in soft contact lens fitting
- CO-3. Perform pediatric and geriatric ocular examination
- CO-4. Assess all the binocular vision components
- CO 5: Investigate the presence of any sensory and motor adaptations
- CO 6: Recognize the optical, non-optical, electronic and assistive devices for low vision patient

Course Outcomes (COs)

Course Title & Code: Project Management (22MCM202A)

Upon completion of this course students will be able to:


- CO-1. Explain the characteristics of projects, Operations and principles of Project Management
- CO-2. Discuss the Project Management Competency Elements as per PMA's Individual Competence Baseline Ver 4.0
- CO-3. Discuss the tools for Project Execution, Monitoring and control
- CO-4. Apply the tools for project planning and Create a Project Management Plan covering Project Charter, Work Breakdown Structure, Project Organisation, Time Management Plan and Risk Management Plan

Course Outcomes (COs)

Course Title & Code: Public Health and Community Optometry (19OPT313A)

After Undergoing This Course Students Will Be Able To:

- CO-1. Explain public health optometry and community based eye care in India
- CO-2. Describe in detail about tele optometry, vision 2020, NPCB program
- CO-3. Develop Information, education & communication materials on eye and vision care for the


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- benefit of the public
- CO-4. Organize health education programs in the community
 - CO5: Perform vision screening for various eye diseases in the community and for different age groups
 - CO6: Evaluate and assess health care programme

Course Outcomes (COs)

Course Title & Code: Occupational optometry & Practice Management (22OPTXXX)

After undergoing this course students will be able to:

- CO-1. Determine visual requirement of jobs
- CO-2. Describe the effects of physical, chemical and other hazards on eye and vision
- CO-3. Identify occupational causes of visual and eye problems
- CO-4. Prescribe suitable corrective lenses and eye protective wear specific to a job
- CO5: Able to set visual requirements and standards for different jobs
- CO6: Determine visual requirement of jobs

Course Outcomes (COs)

Course Title & Code: Clinical Optometry 4

After the successful completion of this course, the student will be able to:

- CO-1. Understand the basics of soft contact lenses
- CO-2. Enumerate different types of soft contact lenses and their designs
- CO-3. Recognize various types of fitting & troubleshoot
- CO-4. Identify different types of binocular vision anomalies
- CO5: Investigate the presence of any sensory and motor adaptations
- CO6: Recognize the optical, non-optical, electronic and assistive devices

Course Outcomes (COs)

Course Title & Code: Research Project (19OPT401A)

After Undergoing This Course Students Will Be Able To:

- CO-1. Refine the problem in Allied Health Science
- CO-2. Identify appropriate methodology to solve the problem
- CO-3. Propose solutions to the problem identified
- CO-4. Prepare a project report as per the specified guidelines
- CO5: Presentation of the research finding in an appropriate forum


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Course Outcomes (COs)

Course Title & Code: Internship (19OPT402A)

After undergoing this internship, student will be able to:

- CO-1. Perform routine eye examination
- CO-2. Evaluation in speciality ares of optometry - Contact lens, Binocular Vision and Low vision care
- CO-3. Perform diagnostics ocular investigations
- CO-4. Describe the referrals and follow-up criteria

Course Outcomes (COs)

Course Title & Code: Research Project (22OPTXXX)

After Undergoing This Course Students Will Be Able To:

- CO-1. Refine the problem in Allied Health Science
- CO-2. Identify appropriate methodology to solve the problem
- CO-3. Propose solutions to the problem identified
- CO-4. Prepare a project report as per the specified guidelines
- CO5: Presentation of the research finding in an appropriate forum

Course Outcomes (COs)


Course Title & Code: Internship (19OPT410A)

After undergoing this internship, student will be able to:

- CO-1. Perform routine eye examination
- CO-2. Evaluation in specialty ares of optometry - Contact lens, Binocular Vision and Low vision care
- CO-3. Perform diagnostics ocular investigations
- CO-4. Describe the referrals and follow-up criteria


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