

Bharati Vidyapeeth (Deemed to be) University, Pune  
**Department of Optometry**  
Name of Programme: **Bachelor of Clinical Optometry**

**Program outcomes:**

“Optometrists are primary eye care professionals, institutionally educated and clinically trained to examine, diagnose, and correct the refractive optical errors of the visual system by prescribing spectacles, contact lenses, low vision devices and vision therapy eye exercises to patients complaining of vision related problems.”

An optometrist's skills are based on an intimate knowledge of the workings of the eye and visual system. A variety of complex techniques and instruments complement an understanding of the patient's needs. An optometric examination begins with the patient describing his or her problems. The optometrist then performs a series of tests, some of which are carried out routinely and others when indicated by the patient's case history. The consultation concludes with the optometrist's diagnosis of the patient's problem, explaining the diagnosis to the patient and deciding on appropriate treatment. Treatment can range from prescribing spectacles, contact lenses or orthoptics treatment required for squint, to simply giving advice on lighting or visual habits.

It is expected that after completing the course at the Graduate level in Optometry, the students will develop a complete understanding of the interaction between ocular health, systemic health, mental health, and social health. A thorough understanding of major theoretical concepts and sound clinical knowledge is also expected. The students will have the ability to work effectively in diverse fields of the eye care industry be it community, be it clinical, be it retail, corporate, research and academics. They will be able to employ critical thinking and efficiency in problem solving ability for the patient or consumer management. They must develop the ability to transmit complex information in a clear and concise manner as they trained as potential teachers of optometry. As health care practitioners, they must have the ability to understand historically imposed socio-economic issues and encounter them with a strong ethical approach.

**Objectives:**

1. To develop the students in such a way so that they can practice independently as a primary eye care practitioner and render eye care services for the benefit of society.
2. To develop capability in detecting, planning, evaluation, and inventions in achieving the eye care needs of Indian society.
3. To develop such professionals who will actively participate in community optometry programs to achieve the goals of the national programs for the prevention and control of blindness and visual impairment and effectively organize and participate in vision screening eye camps to help controlling blindness and visual impairment.
4. To help the students to learn to maintain collaborative relationships with members of other disciplines to improve health care.

5. To develop an interest in life-long learning for personal and professional advancement among the students.

**Program-specific outcomes:**

To serve the public and the profession well, the newgraduate in Bachelor of Clinical Optometry must embrace and demonstrate the ethical and professional standards appropriate to being recognized as a healthcare provider. The new graduate in Bachelor of Clinical Optometry must also recognize that the completion of the Bachelor of Clinical Optometry degree program is only the first step in a life-long commitment to self-directed learning and continual professional improvement.

The School of Optometry shall ensure that before graduation in Bachelor of Clinical Optometry each student will have demonstrated critical professional and personal attributes, including the following:

Personal attributes:

- a commitment to life-long learning and providing the highest standard of care
- the ability to acquire, analyze and apply new information while making reasonable and informed decisions that are consistent with the interests and needs of the patient and broader community
- problem-solving and critical-thinking skills that integrate current knowledge, scientific advances, and the human/social dimensions of patient care to assure the highest quality of care for each patient
- the ability to recognize personal limitations regarding optimal patient care and to work with the broader health care community in providing the best care possible.

Professional attributes:

- an understanding of professional ethics and challenges to the optometric profession posed by conflicts of interest inherent in health care delivery, and the ability to incorporate those principles into decisions affecting patient care, always keeping the patient's welfare foremost. Patients should get equal treatment irrespective of any gender, age or socio-economic differences.
- professionalism, by demonstrating honesty and integrity in all interactions with patients and their families, colleagues, and others with whom the optometrist must engage in his/her professional life
- respect for the dignity of every patient and a commitment to empathetic and confidential care
- a commitment to work as an integral member of the larger interprofessional health care team to improve patient care outcomes
- a commitment to be actively involved in organized optometry and the community
- to be able to become an entrepreneur as an optometrist

The new graduate in Bachelor of Clinical Optometry must be knowledgeable to provide quality eye and vision care to their patients, they must have an established knowledge of the all basic fundamentals, clinical Refraction, instruments and investigations, applied and dispensing Optics, Binocular Vision and Orthoptics and Contact lenses. The foundation must be broad and include the biological, medical, vision, and optical sciences, as well as a basic understanding of the health care delivery system. The school of optometry shall ensure that after graduation each student will have demonstrated knowledge of:

- Salient features of cells and tissues of the human body, topography of the constituents of organ systems, structural relationships and basic functions, fundamentals of organic aspects and metabolism of major biochemical in the body.
- Conceptual awareness of optics, fundamentals, various optical instruments used to measure various aspects of light.
- Optics for understanding the basis of clinical refraction and to study the eye.
- Knowledge about surfacing, glazing, polishing, cutting, fitting spherical, spherocylindrical, and bifocal spectacle lenses.
- Knowledge and measurement of various frame parameters essential for an ideal spectacle fit.
- Thorough understanding of the anatomical structure and functions of the eye and its adnexa related nervous system and correlate these with the functions of the whole body.
- Awareness of the pathogenic organism, etiological causes and the changes seen in the tissues and particularly in the eyeball. Spreading public awareness in prevention of Visual impairment by adapting safety and hygienic methods.
- The characteristics of bacteria, Viruses, Fungi and parasites causing diseases of the eye. The principles of sterilization and disinfection in hospital and ophthalmic practice, the pathogenesis of the diseases caused by micro-organisms in the human body with particular reference to the eye infection and to apply principles of diagnostic ocular microbiology.
- Pharmaceutical agents, classification mode of action, indications, drug-response relationship with respect to Ocular medications as well.
- Knowledge of fundamentals in Visual Optics is a pre-requisite for Practical training in clinical refraction and related area.
- Ophthalmic Lens parameters and fittings according to the prescription, from an uncut lens to fitted lens. To check any defects in the finished lens.
- Overall knowledge about the construction and working of various instruments used in the Optometric practice and helps the students to use the instruments to an optimum level in diagnosis and management of ocular disorders and help them in maintenance of these instruments.
- Basic history taking and basic examination technique of a patient attending the Outpatient Department with ophthalmic complaints. The student should also become familiar with certain diagnostic treatments and specialized ones to confirm the clinical findings and to help aid in diagnosis.
- Ocular diseases of all parts of the eyeball and adnexa, their etiopathogenesis, clinical features, diagnosis and management.

- The structures and processes contributing to the development of refractive error and other optical and perceptual abnormalities of the visual system.
- Co-relate all aspects of Optics, clinical examination, diagnosis and planning Optometric management of the patient as in optometric optics.
- Patients both Young and old, who suffer from irreversible and incurable conditions which cannot be managed by Conventional therapy, can be helped to perform their tasks with Low Vision Aids, prescribing of which is a Specialty of Optometrists.
- Contact lenses and anterior eye, Hard and Soft Contact lenses, Specialty Contact lenses, pre-fitting, fitting assessment, choosing the right lens and modality according to the condition.
- Binocular vision and basics of Orthoptics included in the theory, forms the background for the student to understand binocular vision, non-strabismic and ocular motility disorders.
- Details of the etiology, differential diagnosis and management aspects of major eye diseases which are main causes of visual impairment in India and worldwide. Role of Nutrition in Eye care.
- Role of an Optometrist in diagnosis, prevention and management of such diseases when he is working as part of a medical team or even in private clinic. Urgent, emergency, and routine referral of patients diagnosed to have such diseases.
- Identification and management of the common and important ocular problems in the community and to investigate an epidemic of ocular diseases and to institute control measures. It is also to assess the effect of social, cultural, and economic characteristic of the community on its health status with special reference to ocular diseases.
- The psychosocial dynamics of the doctor/patient relationship and understanding of the social, psychological and economic forces affecting diverse patient populations such as catering to visual needs of Pediatric, geriatric and various occupational groups, in primary eye care and specialized management.
- Skills of a community eye health care worker. Practice management structure and strategies as a professional and a businessman to handle an optical setup.

The School of Optometry shall ensure that after graduation each student will have demonstrated the following:

- all the skills required for the diagnosis, triage, management and/or treatment of common visual conditions, including or resulting from:

- refractive anomalies

- abnormalities of accommodation, monocular or binocular vision skills, oculomotor

- sensory/perceptual dysfunctions of ocular disease and trauma -prior ocular surgery and/or laser intervention

- systemic disease -environmental or occupational conditions

- the ability to order and interpret frequently needed laboratory and diagnostic procedures

- the critical-thinking skills needed to assess the patient's visual and physical status and to interpret and process the data to formulate and execute effective management plans

- the ability to prescribe or use ophthalmic materials, contact lenses, vision therapy, low vision devices, to treat and manage vision disorders and diseases

- an understanding of nutritional influences on ocular physiology and systemic health and disease

- the ability to understand, evaluate and apply the use of contemporary imaging technologies in the provision of eye and vision care

- the ability to recognize and initiate the coordination of patient care requiring advanced medical, systemic, inter-professional or specialty care

- the ability to recognize life-threatening conditions and to initiate immediate intervention • effective communication skills, both oral and written, as appropriate for maximizing successful patient care outcomes

- the ability to appropriately use all resources, including the use of ancillary personnel, intra- and inter-professional collaboration, co-management, and referral, in ensuring the best quality patient care

- the ability to access evidence-based knowledge (including through the use of information technology) and manage information, and to apply that information in making decisions about patient care and health care delivery

- the ability to embrace the cultural diversity and individual differences that characterize patients, population, and the health care team

- the ability to work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services by working with interdisciplinary and multidisciplinary sectors.

**Program structure:**

Bachelor of Clinical Optometry is a four-year course, with three years of academic study and fourth year as clinical internship year. Students are encouraged for active learning by involving them in a detailed comprehensive, blended course, self-study using library resources, teaching and clinical assignments, patient care, workshops, hands-on training, educational seminars, and industry interactions.

For helping the students in deep learning, apart from regular lectures, guest faculties, field experts, and industry officials are invited, and they interact with the students.

Students must complete one review of literature in the form of submission during their fourth year. They can choose their area of interest, for their submission under the supervision of their internship coordinator.

**Ranking of the candidates:**

Students will be awarded class based on the total aggregate marks for all the semester examinations and Final year examination as follow:

50% and more but less than 55% aggregate marks = Pass Class

55% and more but less than 60% aggregate marks = Second Class

60% and more but less than 70% aggregate marks = First Class

70% and above = First Class with Distinction

**Syllabus: Bachelor of Optometry, First Year, Semester I**

Course Code	Name of Course
T 101	Human Biology
T 102	Basic Biochemistry
T 103	Physical Optics and Lighting
T 104	Geometrical Optics
T 105	Dispensing Optics

**Pattern of Examination at end of Semester I**

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Human Biology	=T101+T102	100	50
P2	Basic Optics	=T103+T104	100	50
P3	Dispensing Optics	=T105	100	50
V 1	Clinical	=T101+T102	100	50
V 2	Technical	=T103+T104+T105	100	50
Total Marks Examination			500	250

## Course Outcome

(what students should be able to do at the end of a course)

### First year, Semester I

Course Code	Name of Course	Course Outcome
T101	Human Biology	The primary objective of this course is the introduction to Anatomy, histology, and Physiology of the human body. Knowledge of basic structure and function of the human body to equip them with the information needed for other topics like biochemistry, Pathology and Microbiology and Systemic and ocular disorders.
T102	Basic Biochemistry	Bodily Function relies upon chemistry, thus the fundamentals of biochemistry, physio-chemical aspects will guide to enhance the learning for organic aspects of Carbohydrates, proteins, lipids and Nucleoproteins, enzymology, Vitamins, Minerals, and hormones. It is also the prerequisite for ocular biochemistry such as in Tear film and other ocular parts.
T103	Physical Optics & Principles of lighting	The aim of this course is to give the student the fundamentals of wave theory of light and consequences of wave aspects like interference, diffraction, and polarization. To understand the nature and importance of light which is essential for the human to 'see'. The electrical artificial light sources and light measurement are also covered. Various optical instruments used to study the wave aspects of light are also discussed in this course. A Unified approach to theory and experiments will be presented.
T104	Geometrical Optics	Geometric Optics is the basis for clinical refraction and to study the optics of eye. The derivation of various formulae for refraction in spherical surfaces and lens is discussed. Application of vergence technique to calculate dioptric powers, nature of image, separation distances in microscopes and telescopes is covered
T105	Dispensing Optics I	Proficiency in terminologies, measurements, and basic calculation (single vision lens and prism related) used in spectacles. Sound knowledge regarding various ophthalmic lenses and frames (materials, manufacturing techniques, faults/defects). In-depth knowledge about different brands of frames available in the market.



## Syllabus: Bachelor of Optometry, First Year, Semester II

Course Code	Name of Course
T 201	Eye Anatomy & Physiology
T 202	Basic & Ocular Pharmacology
T 203	Pathology and Microbiology
T 204	Ophthalmic Optics
T 205	Computer Fundamentals Support Subject* (examination will not be conducted)

### Pattern of Examination at end of Semester II

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Eye Anatomy & Physiology	=T201	100	50
P2	Related Sciences	=T202+T203	100	50
P3	Ophthalmic Optics	=T204	100	50
V 1	Clinical	=T201+T202+T203	100	50
V 2	Technical	=T204	100	50
Total Marks Examination			500	20

## Course Outcome

(what students should be able to do at the end of a course)

### First Year Semester II

Course Code	Name of Course	Course Outcome
T 201	Eye Anatomy and Physiology	<ol style="list-style-type: none"><li>1. A detailed understanding of the Anatomical structure and functions of the Eye.</li><li>2. Conceptualizing and thorough knowledge of microscopic and the Macroscopic Anatomy of the various parts of eyeball, adnexa and orbit, muscles and associated surrounding structures of the eye along with their corresponding Blood Supply and Innervation.</li><li>3. A general overview of ocular embryology and growth of the eye, Visual and Pupillary pathway, Cranial nerves, old age-related changes in eye.</li><li>4. Ocular physiology includes the basic and fundamental functional mechanisms of the Visual apparatus. Includes physiology of parts of the eye, protective mechanisms, Visual perception, Binocular Vision, eye as a refracting apparatus, Accommodation, Convergence and Near reflex triad.</li><li>5. To be able to describe their structural importance, salient features, functions, and correlate these with functions of the whole body.</li></ol>
T202	Basic & Ocular Pharmacology	<p>Pharmacology is the basis of Therapeutics.</p> <p>The students are taught mechanism of action, dose response mechanism, indications and contraindications and mode of administration of various diagnostic and therapeutic drugs for various diseases and ocular procedures.</p>
T203	Pathology and Microbiology	<p>To prepare the students to be aware of the pathogenic organism, etiological causes and the changes seen in the tissues and particularly in the eye chamber.</p> <p>It also helps them to educate the public in prevention of blindness by adapting hygienic methods.</p>
T204	Ophthalmic Optics	<p>Conceptualization of the eye as an optical system, the theory of schematic eye and various types of refractive errors. Their etiology, epidemiology, and management. Proficiency in visual acuity measurement. In-depth knowledge about laser optics and holography.</p>

**Syllabus: Bachelor of Optometry, Second Year, Semester III**

Course Code	Name of Course
T 301	Visual Optics
T 302	Dispensing Optics
T 303	Optometric Instruments
T 304	Clinical Examination of Eye
T 305	Ocular Diseases (I)

**Pattern of Examination at end of Semester III**

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Visual Optics	=T301	100	50
P2	Dispensing Optics	=T302	100	50
P3	Eye Checkup & instruments	=T303+T304+T305	100	50
Viva1	Clinical	=T303+T304+T305	100	50
Viva2	Technical	=T301+T302	100	50
Total marks Examination			500	250

## Course Outcome

(what students should be able to do at the end of a course)

### Second Year, Semester III

Course Code	Name of Course	Course Outcome
T301	Visual Optics	<ol style="list-style-type: none"><li>1. This course basically helps to equip the students with a thorough knowledge of mirrors and lenses. Students should be able to understand the fundamentals of optical components of the eye. At the end of this course, students should be able to predict the basic properties of the images formed on the retina, by the various optical media of the human eye.</li><li>2. A sound knowledge of theory in Visual Optics is a pre-requisite for Practical training in clinical refraction and related areas. Students should be able to gain theoretical knowledge on the measurement of visual acuity.</li><li>3. Student should be able to understand the objective and subjective clinical refraction and able to perform them by gaining a deep theoretical and practical knowledge about them both.</li><li>4. The objective of this course is to prepare the candidate through didactic lectures which he is expected to translate into practice at the clinics. Student should be able to co-relate the visual acuity measurement with objective and subjective findings.</li></ol>
T302	Dispensing Optics II	Proficiency in terminologies, measurements, and basic calculation (lens and prism related) used in spectacles. Sound knowledge regarding various multifocal lenses and frames (types, manufacturing techniques, standards). In-depth knowledge about Progressive Addition Lenses, aspheric optics, photochromic and polaroid.
T303	Optometric Instruments	<ol style="list-style-type: none"><li>1. All-inclusive knowledge about the construction, principle, working, applications and maintenance of various instruments used in Optometric practice.</li><li>2. The students should be able to use these instruments wherever indicated for the appropriate Diagnosis and Management of ocular disorders.</li><li>3. Includes elementary instrumentations such as the trial sets to specialized instruments such as the Slit Lamp Biomicroscopes.</li></ol>
T304	Clinical examination of Visual system	<ol style="list-style-type: none"><li>1. Acquaintance with all the examination procedures of the visual system.</li><li>2. Systematic order of Examinations will be made known, starting with basic history taking and all the comprehensive examination techniques to perform on a patient attending the Outpatient Department with Ocular complaints.</li><li>3. Students will also get familiarized with certain essential diagnostic instrumentations for eye such as ophthalmoscopy to confirm clinical findings and thus aid in their diagnosis.</li></ol>
T305	Ocular diseases-I	1. All-inclusive yet concise knowledge of Ocular diseases of the Orbit, Adnexa, Eyelids, Lacrimal system, Conjunctiva, Cornea, Uveal Tract,

		<p>Sclera and Episclera.</p> <p>2.Involves familiarity of the structures involved, etiopathogenesis, Classification clinical picture, diagnosis, and treatment of the ocular diseases.</p>
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**Syllabus: Bachelor of Optometry, Second Year, Semester IV**

Course Code	Name of Course
T 401	Optics & Refraction
T 402	Optometric Optics & LVA
T 403	Ocular Diseases (II)
T 404	Optometric Investigations
T 405	Hospital Procedures & Medical Psychology Support Subject* (Examination will not be conducted)

**Pattern of Examination at end of Semester IV**

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Optics & Refraction	=T401	100	50
P2	Optometric Optics & LVA	=T402	100	50
P3	Eye investigations & disease	=T403+T404+T405	100	50
Viva1	Clinical	=T403+T404	100	50
Viva2	Technical	=T401+T402	100	50
Total marks Examination			500	250

## Course Outcome

(what students should be able to do at the end of a course)

### Second Year, Semester IV

Course Code	Name of Course	Course Outcome
T401	Optics & Refraction	In depth knowledge of enhanced and newer techniques about the different lens designs (lenticulars & high index), different types of lens tints and coatings, special purpose frames. Proficiency in dispensing counter management, using and understanding the basic instrumentation of various dispensing tools in daily practice. Understanding the needs of the patient and dispense accordingly.
T 402	Optometric Optics and LVA	<ol style="list-style-type: none"><li>1. Optometric Optics is more a clinical oriented course. The object of the course is to prepare the student to co-relate all aspects of Optics, clinical examination, diagnosis and planning Optometric management of the patient.</li><li>2. Students should have a deep understanding about the condition of Low Vision patients, the additional sensitivity and care to be taken while handling them and should understand the basic low vision clinical set up.</li><li>3. Students should be able to understand the importance of detailed history taking and elaborate clinical examination of low vision patients.</li><li>4. Students should be able to understand optical, non-optical, electronic and all other types of assistive devices, both basic and latest ones.</li><li>5. Students should be able to learn how to train low vision patients and dispense them with required optical and non-optical assistive devices.</li><li>6. Students should be able to understand the importance of making referrals and follow-up the cases of low vision patients.</li></ol>
T 403	Ocular diseases- II	<ol style="list-style-type: none"><li>1. All-embracing yet concise knowledge of Ocular diseases of Lens, Vitreous, Retina, Neuro-ophthalmology. Ocular Trauma and Blindness.</li><li>2. Involves understanding of the structures involved, etiopathogenesis, Classification clinical picture, diagnosis, and treatment of the ocular diseases.</li></ol>
T 404	Optometric investigations	<ol style="list-style-type: none"><li>1. Comprehensive and concise understanding of all the Ophthalmic Investigations of the Anterior segment, Posterior Segment of the eye and Orbit.</li><li>2. Review of all the basic knowledge of the instrumentation, investigations, and interpretation enough for proper referral to particular department or next procedure.</li><li>3. Special attention will be paid to methods of examination and instruments expected to be used as an Optometrist in an Ophthalmic and hospital as well as an Optical establishment.</li></ol>

### Syllabus: Bachelor of Optometry, Third Year, Semester V

Course Code	Name of Course
T 501	Contact Lenses (I)
T 502	Binocular Vision & Ocular motility
T 503	Systemic diseases and the eye
T 504	Major Eye diseases
T 505	Nutrition
T 506	Public health & Community Optometry Support Subject* (examination will not be conducted)

### Pattern of Examination at end of Semester V

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Contact Lenses	=T501	100	50
P2	Binocular Vision	=T502	100	50
P3	Diseases & Optometry	=T503+T504+T505+T506	100	50
Viva1	Clinical	=T503+T504+T505+T506	100	50
Viva2	Technical	=T501+T502	100	50
Total marks Examination			500	250



## Course Outcome

(what students should be able to do at the end of a course)

### Third year, Semester V

Course Code	Name of Course	Course Outcome
T501	Contact Lens (I)	<p>In addition to revision of anatomy and physiology of the anterior segment and visual optics, the students are made proficient in all the basic aspects of contact lens practice.</p> <p>A detailed understanding about the History, Optics, Designs, Materials, Manufacturing, Classification, Indications and Complications of Rigid Gas Permeable (RGP) contact lenses.</p> <p>Acquaintance with all the investigations, instruments and procedures used before and after fitting contact lenses.</p> <p>Making the students eligible to fit, evaluate, order, and dispense the RGP contact lenses.</p>
T502	Binocular Vision & Ocular Motility	<p>A sound theoretical knowledge of binocular vision paves the way for clear understanding of the physiology of the eye in clinics.</p> <p>The theories of binocular vision and basics of orthoptics included in the theory forms the background for the student to understand binocular vision and ocular motility disorders and makes them proficient in dealing these disorders with non- surgical treatment &amp; management, along with recent advancements in orthoptics.</p> <p>Making them understand the concept and application of vision therapy for better patient management.</p>
T503	Systemic Diseases and the Eye	<p>This chapter is meant for Introduction about following systemic diseases and their classifications, etiopathology management and ocular manifestations along with recent optometric management in the systemic diseases like arterial hypertension, diabetes mellitus, acquired heart disease – embolism, cancer, connective tissue disease, thyroid disease ,tuberculosis , helminthiasis, common tropical medical ailments (malaria, leprosy etc.), malnutrition, introduction to immunology, neurological disorders - stroke/CVA, general medical emergencies - first aid and genetics.</p>
T504	Major Eye Diseases	<p>In this chapter student should know about Cataract, Glaucoma, Retinal detachment, Corneal ulcer &amp; opacities, Visual loss – ophthalmic lesion, Diabetic Retinopathy, Macular degeneration and Chemical burns and their various investigations and various way of optometric management.</p>
T505	Nutrition	<p>Introduction about following topic of nutrition like, energy, proteins, fats, minerals, vitamins, measles and associated eye disorders and low birth weight, as well as their ocular manifestations and optometric management.</p>

**Syllabus: Bachelor of Optometry, Third Year, Semester VI**

Course Code	Name of Course
T 601	Contact Lenses (II)
T 602	Advanced Orthoptics
T 603	Applied & Clinical Optometry
T 604	Optometry & Law in India Support Subject* (examination will not be conducted)
T 605	Basic Accountancy & Public relations Support Subject* (examination will not be conducted)

**Pattern of Examination at end of Semester VI**

Paper No.	Name of Paper	=Topics included	Total marks	Passing marks
P1	Contact Lenses	=T601	100	50
P2	Advanced Orthoptics	=T602	100	50
P3	Applied, Clinical Optometry	=T603+T604	100	50
Viva1	Clinical	=T601+T602	100	50
Viva2	Technical	=T603+T604	100	50
Total marks Examination			500	250

## Course Outcome

(what students should be able to do at the end of a course)

### Third year, Semester VI

Course Code	Name of Course	Course Outcome
T601	Contact Lenses (II)	<p>An in-depth knowledge about the Materials, Manufacturing, Indications, Availability and Complications of soft contact lenses. Making the students eligible to fit, evaluate, order and dispense soft lenses.</p> <p>Thorough understanding of lens care regime.</p> <p>Sound knowledge regarding various types of specialty contact lenses such as Toric and Multifocal contact lenses, Pediatric lenses, Rose K lenses, Scleral and Orthokeratology lenses.</p>
T602	Advanced Orthoptics	<p>To understand the neuro muscular anomalies in depth. Detailed classification, etiology, factors responsible, role of accommodation &amp; convergence, genetics and occurrence of squint and associated binocular vision problem are discussed.</p> <p>Outline of Routine Orthoptics Examination along with detailed history – recording and significance and measurement of angles of deviation. Sensory signs of patients with subjective symptoms description and significance are covered. In order to make the students proficient in dealing with special cases with non-surgical treatment &amp; management, along with being able to help the patients with recent advancements in orthoptics. Making them understand the concept and application of vision therapy for patient management</p>
T603	Applied & Clinical Optometry	<p>This chapter includes History = Genetic factors, Prenatal factors, Perinatal factors, Post natal factors. Measurement of visual acuity. Normal appearance, pathology and structural anomalies of Orbit, Eye lids, Lacrimal system, Conjunctiva, Cornea, Sclera Anterior chamber, uveal tract, pupils Lens, vitreous, fundus Oculomotor system. Measurement of refractive status. Determining binocular status. Determining sensory motor adaptability. Compensatory treatment and remedial therapy for :</p> <ol style="list-style-type: none"><li>1. Myopia, Pseudo myopia, Hyperopia, Astigmatism, Anisometropia, Amblyopia. Their management with latest mode.</li><li>2. Remedial and compensatory treatment of strabismus and nystagmus. Vergence and accommodation.</li><li>3. Delayed development in children and their various visual milestones.</li></ol> <p>Introduction to occupational health, hygiene and safety international bodies like ILO, WHO, National bodies like Labor Institutes, National Institutes of Occupational Health, National Safety Council, etc.</p> <p>Occupational diseases/occupation related diseases caused by</p>

		<p>physical agents, chemical agents, and biological agents. Occupational hygiene/environmental monitoring. Recognition, evaluation, and control of hazards. Illumination – definition, measurements, and standards.</p> <p>Occupational safety. Causes of accidents, Vision, lighting color and their role. Accident analysis, Accidents prevention.</p> <p>Ocular and visual problems of occupation. Electromagnetic radiation. Ionizing, Non-ionizing – Infra red, Ultraviolet, Microwave, LASER. Injuries -Medical.</p> <p>Chemical Toxicology - metals, chemicals</p> <p>Prevention of occupational diseases.</p> <p>Medical examination/medical monitoring.</p> <p>Pre-employment/pre-placement.</p> <p>Personal protective equipment. General Goggles, face shields, etc. Selection shields etc. Selection and use. Testing for standards.</p> <p>Standards. Visual standards for jobs. Problems of special occupational groups. Drivers, pilots, and others.</p> <p>Structural changes in eye.</p> <p>Age related changes in Eye like, Physiological changes in eye. Optical and refractive changes in eye.</p> <p>Understanding about Aphakia and its correction by various mode of management.</p> <p>Ocular diseases common in old eye, with special reference to cataract, glaucoma, macular disorders, vascular diseases of the eye etc.</p>
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**Syllabus: Bachelor of Optometry, Fourth Year**

**INTERNSHIP**

1 year in specialty clinics, hospitals and Optical establishments.

**Clinical Examination (Viva + Practical)**

Clinical Optometry	100
Investigative Optometry	100
Dispensing Optics & Workshop Practice	100
Total Marks	300