



PARAMEDICAL COUNCIL OF INDIA

DIPLOMA IN OPTOMETRY

(D.O.T.)

SYLLABUS

PARAMEDICAL COUNCIL OF INDIA

Ch. No.157/1, Near Laxmi Nagar, Metro Station Gate No 1, Vikas Marg, Delhi-92

DIPLOMA IN OPTOMETRY

COURSE DURATION:-

- It is 2 years + 6 months internship full time Diploma Course
- ELIGIBILITY:-
- Candidate must have passed 12th with Physics, Chemistry, Biology or Physics, Chemistry, Math's with 35% marks in Intermediate exams. (From UP board or any other recognized board).
- Candidate must have completed age of 17 years of age as on 31st December of admission year. There is no maximum age limit for the admission.

FIRST YEAR

- 1) ANATOMY & PHYSIOLOGY
- 2) PHYSICAL OPTICS , PRISM & LENS
- 3) RET & REF. TECH, TRANSPOSITION, REF. ERROR

SECOND YEAR

- 1) DISEASES OF EYE , DIAGNOSTIC INSTRUMENT
- 2) PHARMACOLOGY, PATH. & MICRO.MECHANICAL OPTICS
- 3) PUBLIC HEALTH, COMMUNITY OPHTHALMOLOGY

FIRST PAPER: SYLLABUS COVERS

1. ANATOMY & PHYSIOLOGY

1. Introduction.
2. The cell.
3. The tissues.
4. Organs and system.
5. Skeletal system.
6. Joints of the skeleton.
7. Blood.
8. Lymphatic system.

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9. Cardiovascular system.
10. Respiratory system.
11. Definition of sociology and social problem.
12. How illness affect society.
13. Role of society in preventing epidermis diseases Psychology.
14. Psychology definition.
15. Psychology of sick person.
16. Needs for psychology support to sick person.
17. Care of mentally retired and insane persons.
18. Definition.
19. First aider –definition duties and responsibilities.
20. Artificial respiration, electric shock, burns, control of bleeding, unconsciousness.

2. PHYSICAL OPTICS, PRISM & LENS

1. When a light beam passes through the interface of two different materials, its path changes depending on the difference in the materials' refractive indices.
2. When light changes direction at the interface between two different media, the wave-front returns to the medium from which it originated.
3. A physical characteristic of all lenses, diffraction is an optical effect that limits the resolution of a camera and lens.
4. A term used in optics, spectroscopy, and radio astronomy to indicate some type of spreading out.
5. The ratio of the height of the object to the height of the image is called linear magnification.
6. Light exhibits a dual nature, acting as both a wave and a particle.
7. A fundamental attribute of ocular optics that relates distance units to visual angle units on the retina.
8. A branch of atomic, molecular, and optical physics that deals with how photons interact with atoms and molecules.
9. Physical optics, also known as wave optics, consider light as a wave.

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10. Light behaves as waves when interacting with objects close to or smaller than its wavelength. It explains various optical phenomena, such as interference, diffraction, and polarization of light.
11. These specialized glasses are used to treat binocular vision problems, eliminate double vision, and improve near vision. They work by changing the way light enters the eye. Prism lenses can also help with depth perception, eye strain, and fatigue.
12. These prisms split white light into its constituent colors.
13. Prisms and lenses are examples of refraction, which is the distortion that occurs when looking through a glass of water.
14. These prisms are made of polyvinyl chloride and are made up of tiny parallel prisms stacked on top of each other.
15. This rule states that the prismatic power of a lens is equal to the distance from its optical center in centimeters multiplied by the lens's power in diopters.

3. RET & REF. TECH, TRANSPOSITION, REF. ERROR

1. Retinoscopy is an exam technique that objectively measures the refractive error of the eye.
2. This is done by looking through an optical instrument called a retinoscope to observe the movement of reflected light in a patient's pupil.
3. This is done by looking through an optical instrument called a retinoscope to observe the movement of reflected light in a patient's pupil.
4. This objective assessment allows the examiner to assess refractive error without subjective input from the patient, making it a useful tool for evaluating infants, young children, adults with developmental delays, and others who may not otherwise be able to cooperate for subjective refraction.
5. In addition to determining refractive error, retinoscopy may also be used to evaluate accommodative function and to assess for ocular surface and media pathologies such as cataracts.
6. Reference techniques are methods for compiling citations to acknowledge sources of information used in writing. The purpose of referencing is to: Support arguments with evidence, Avoid plagiarism, Show the breadth of reading, and Make clear which ideas are original.
7. This procedure is used to treat isolated rectus muscle paralysis, such as sixth nerve palsy. The goal is to realign the eye and achieve single vision.

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8. The procedure involves altering the mechanical properties of the muscle so that the eye moves in a different direction when the muscle contracts. The results are often good, but not perfect.
9. This process involves converting one set of spherical measurements into another. It can be useful when ordering new glasses online or to understand how a current prescription works.
10. Transposition is necessary because astigmatism is typically corrected using cylindrical lenses, which are prescribed using two different notations: plus cylinder and minus cylinder.
11. Transposition surgery involves an alteration in the mechanical properties of muscle action, such that the direction of movement of the eye following contraction of the muscle is modified.
12. Refractive errors are a common eye condition that occurs when the shape of the eye prevents light from focusing on the retina, resulting in blurred vision.
13. Myopia (nearsightedness): Difficulty seeing objects that are far away.
14. Mid_Hyperopia (farsightedness): Difficulty seeing objects that are close up.
15. Astigmatism: Difficulty seeing objects that are close up or far away due to an irregular cornea or lens.

SECOND PAPER: SYLLABUS COVERS

1. DISEASES OF EYE, DIAGNOSTIC INSTRUMENT

1. Eye Cataracts: A cataract is a clouding of the lens in your eye. The lens is normally clear. When clouding occurs, it keeps light rays from passing through the lens and focusing on the retina.
2. Eye Diabetic retinopathy: Diabetic retinopathy is a complication of diabetes, caused by high blood sugar levels damaging the back of the eye (retina).
3. Glaucoma: A group of diseases that can damage the optic nerve and result in vision loss and blindness.
4. Amblyopia: Also known as "lazy eye", this is the most common cause of vision impairment in children.
5. Blepharitis: An inflammation of the eyelids that causes redness, irritation, itchiness, and dandruff-like scales on the eyelashes.
6. Conjunctivitis: Also known as pink eye, this is a contagious disease that causes the whites of the eye to appear pink and may cause a sticky discharge.

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7. Retinal tear: Occurs when the vitreous, the gel-like substance in the center of the eye, shrinks and tugs on the retina, causing a tear in the retinal tissue.
8. Anophthalmia and microphthalmia: Rare eye conditions where one or both eyes are absent or noticeably too small, respectively.
9. Macular degeneration: Can cause vision to become blurry, making it difficult to recognize faces, and straight lines to appear wavy.
10. Slit lamp: A microscope with a light that allows a doctor to examine the eye.
11. Tonometer: Measures eye pressure and can help detect glaucoma.
12. Retinoscope: Determines the refractive power of the eye by observing lights and shadows on the pupil.
13. Auto-refractor: Measures refractive error by measuring how light changes as it enters the eye.
14. Manual keratometer: Measures the curvature of the cornea.
15. Optical coherence tomography (OCT): A non-invasive diagnostic instrument that can detect problems in the eye before symptoms appear.

2. PHARMACOLOGY, PATH. & MICRO.MECHANICAL OPITCS

1. The study of the mechanisms of action of pharmacological agents and their use to treat ocular and systemic diseases. It focuses on the agents that optometrists are licensed to prescribe.
2. Ocular pharmacology involves administering drugs through the eye or systemically to treat ocular disorders. It requires a proper understanding of the eye's anatomy and various pharmacokinetic considerations.
3. Dry eye occurs when there is an imbalance in tear production, drainage, and absorption. This results in the eyes being unable to produce enough or good quality tears.
4. Dendrimers can help with controlled drug release because of their small size, chemical versatility, and drug loading capacity.
5. Studies have shown that hydrogels can reduce the inflammatory response and prolong drug release.
6. Pharmacodynamics: Studies the effects of a drug on biological systems.
7. Pharmacokinetics: Studies the effects of biological systems on a drug.

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8. Students learn about the pathogens that cause ocular infections and how the body's immune system responds to them.
9. Students learn how to prepare stains used in pathology and microbiology, such as eosin, hematoxylin, and Leishmann stain.
10. Students learn about the roots, prefixes, and suffixes of medical words, and how to use them to build medical terms.
11. When a light beam passes through two different materials, its path changes based on the difference in their refractive indices. The greater the difference, the greater the refraction.
12. When light changes direction at the interface between two different media, and the wave-front returns to the original medium, this is called reflection.
13. This law is used in the manufacturing of optical devices like eyeglasses and contact lenses. It's also used to measure the refractive index of different liquids.
14. In this branch of optics, light is described by rays. Light rays are thought of as geometrical lines that originate from sources, extend through media, and are detected.
15. This occurs when a light beam or ray travels from a denser medium to a less dense medium.

3. PUBLIC HEALTH, COMMUNITY OPHTHALMOLOGY

1. Public health is the science and practice of protecting and improving the health of communities, populations, and the world.
2. Disease prevention: Researching and developing ways to prevent disease and injury, and responding to infectious diseases.
3. Healthy lifestyles: Promoting healthy lifestyles and education on the dangers of tobacco and alcohol.
4. Health care: Promoting health care equity, quality, and accessibility.
5. Safety standards: Setting safety standards to protect workers, such as smoke-free indoor air and seatbelts.
6. Nutrition: Developing school nutrition programs to ensure kids have access to healthy food.

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7. Climate change: Addressing the impact of climate change on health.
8. Gun violence: Working to prevent gun violence.
9. Community ophthalmology is a health management approach that uses public health, community medicine, and ophthalmology to improve eye health and prevent blindness.
10. Need assessment, Planning, Mobilizing resources, Field surveys, screening camps, Operational research, and Clinical care?
11. Community ophthalmology aims to: Prevent visual loss, improve the quality of life of the community, Lower eye morbidity rates, and Promote eye health.
12. Community-based ophthalmology programs can include mobile health care and technology-based eye care services.

BOOK

1. **LAB TECH ANATOMY AND PHYSIOLOGY** – BY DR. N. MURGESH
2. **LAB TECH COMMUNITY HEALTH** – BY DR. N. MURGESH
3. **LAB TECH GENERAL BIOCHEMISTRY** – BY DR. DINESH KUMAR SHUKLA,
DR. N. MURGESH
4. **LAB TECH CLINICAL BIOCHEMISTRY** - BY DR. DINESH KUMAR SHUKLA,
DR. N. MURGESH
5. **LAB TECH CLINICAL PATHOLOGY** - BY DR. N. MURGESH
6. **LAB TECH HISTOPATHOLOGY & CYTOPATHOLOGY** –
BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
7. **LAB TECH HAEMATOLOGY** - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
8. **LAB TECH BLOOD BANKING** - BY DR. N. MURGESH
9. **LAB TECH MICROBIOLOGY I** - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH
10. **LAB TECH MICROBIOLOGY II** - BY DR. DINESH KUMAR SHUKLA, DR. N. MURGESH