

Government of Karnataka



PARA MEDICAL BOARD

Revised Syllabus

of

**II & III Year Diploma in Ophthalmic
Technique**

**(Previously first/second year certificate course/
I year DOT/II DOT)**

2017

Model Curriculum Handbook

OPTOMETRY

Who is an Allied and Healthcare Professional?

The Ministry of Health and Family Welfare, accepted in its entirety the definition of an allied and healthcare professional based on the afore-mentioned report, though the same has evolved after multiple consultations and the recommended definition is now as follows-

‘Allied and healthcare professionals (AHPs) includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person(s) physical, mental, social, emotional, environmental health and holistic well-being.’¹

Since the past few years, many professional groups have been interacting and seeking guidance on all those who would qualify under the purview of “allied and healthcare professionals”. In the healthcare system, statutory bodies exist for clinicians, nurses, pharmacists and dental practitioners; but a regulatory structure for around 50 professions is absent in India. Currently, the Government is considering these professions (as listed Annex-1) under the ambit of the allied and healthcare system. However, this number is subject to changes and modifications over time, particularly considering how quickly new technologies and new clinical avenues are expanding globally, creating newer cadres of such professionals.

Scope and need for allied and healthcare professionals in the Indian healthcare system

The quality of medical care has improved tremendously in the last few decades due to the advances in technology, thus creating fresh challenges in the field of healthcare. It is now widely recognized that health service delivery is a team effort involving both clinicians and non-clinicians, and is not the sole duty of physicians and nurses.¹ Professionals that can competently handle sophisticated machinery and advanced protocols are now in high demand. In fact, diagnosis is now so dependent on technology, that allied and healthcare professionals (AHPs) are vital to successful treatment delivery.

Effective delivery of healthcare services depends largely on the nature of education, training and appropriate orientation towards community health of all categories of health personnel, and their capacity to function as an integrated team. For instance in the UK, more than 84,000 AHPs, with a range of skills and expertise, play key roles within the National Health Service, working autonomously, in multi-professional teams in various settings. All of them are first-contact practitioners and work across a wide range of locations and sectors within acute, primary and community care. Australia’s health system is managed not just by their doctors and nurses, but also by the 90,000 university-trained, autonomous AHPs vital to the system.^{2,3}

As the Indian government aims for Universal Health Coverage, the lack of skilled human resource may prove to be the biggest impediment in its path to achieve targeted goals. The benefits of having AHPs in the healthcare system are still unexplored in India. Although an enormous amount of evidence suggests that the benefits of AHPs range from improving access to healthcare services to significant reduction in the cost of care, though the Indian healthcare system still revolves around the doctor-centric approach. The privatization of healthcare has also led to an ever-increasing out-of-pocket expenditure by the population. However, many examples assert the need of skilled allied and healthcare professionals in the system, such as in the case of stroke survivors, it is the support of AHPs that significantly enhance their

rehabilitation and long term treatment ensures return to normal life. AHPs also play a significant role to care for patients who struggle mentally and emotionally in the current challenging environment and require mental health support; and help them return to well-being.² Children with communication difficulties, the elderly, cancer patients, patients with long term conditions such as diabetes people with vision problems and amputees; the list of people and potential patients who benefit from AHPs is indefinite.

Thus, the breadth and scope of the allied and healthcare practice varies from one end to another, including areas of work listed below:

- Across the age span of human development from neonate to old age
- With patients having complex and challenging problems resulting from systemic illnesses such as in the case of diabetes, cardiac abnormalities/conditions and elderly care to name a few;
- Towards health promotion and disease prevention, as well as assessment, management and evaluation of interventions and protocols for treatment;
- In a broad range of settings from a patient's home to community, primary care centers, to tertiary care settings; and
- With an understanding of the healthcare issues associated with diverse socio-economies and cultural norms within the society.

Learning goals and objectives for allied and healthcare professionals

The handbook has been designed with a focus on performance-based outcomes pertaining to different levels. The learning goals and objectives of the undergraduate and graduate education program will be based on the performance expectations. They will be articulated as learning goals (why we teach this) and learning objectives (what the students will learn). Using the framework, students will learn to integrate their knowledge, skills and abilities in a hands-on manner in a professional healthcare setting. These learning goals are divided into nine key areas, though the degree of required involvement may differ across various levels of qualification and professional cadres:

1. Clinical care
2. Communication
3. Membership of a multidisciplinary health team
4. Ethics and accountability at all levels (clinical, professional, personal and social)
5. Commitment to professional excellence
6. Leadership and mentorship
7. Social accountability and responsibility
8. Scientific attitude and scholarship (only at higher level- PhD)
9. Lifelong learning

Promoting self-directed learning of the professionals

The shift in the focus from traditional to competency-based education has made it pertinent that the learning processes may also be revisited for suitable changes. It is a known fact that learning is no more restricted to the boundaries of a classroom or the lessons taught by a teacher. The new tools and technologies have widened the platform and introduced innovative modes of how students can learn and gain skills and knowledge. One of the innovative approaches is learner-centric and follows the concept of **self-directed learning**.

Self-directed learning, in its broadest meaning, describes a process in which individuals take the initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes (Knowles, 1975).¹⁴

In self-directed learning, learners themselves take the initiative to use resources rather than simply reacting to transmissions from resources, which helps them learn more in a better way.¹⁵ Lifelong, self-directed learning (SDL) has been identified as an important ability for medical graduates (Harvey, 2003)¹⁶ and so is applicable to other health professionals including AHPs. It has been proven through many studies worldwide that the self-directed method is better than the teacher-centric method of learning. Teacher-directed learning makes learners more dependent and the orientation to learning becomes subject-centred. If a teacher provides the learning material, the student is usually satisfied with the available material, whereas if a student is asked to work on the same assignment, he or she invariably has to explore extensive resources on the subject.¹⁵ Thus the handbook promotes self-directed learning, apart from the usual classroom teaching and opens the platform for students who wish to engage in lifelong learning.

Integrated structure of the curriculum

Vertical integration, in its truest sense, is the interweaving of teaching clinical skills and knowledge into the basic science years and, reinforcing and continuing to teach the applications of basic science concepts during the clinical years. (Many efforts called 'vertical integration' include only the first half of the process).

Horizontal integration is the identification of concepts or skills, especially those that are clinically relevant, that cut across (for example, the basic sciences), and then putting these to use as an integrated focus for presentations, clinical examples, and course materials. e.g. Integration of some of the basic science courses around organ systems, e.g., human anatomy, physiology, pathology; or incorporating ethics, legal issues, finance, political issues, humanities, culture and computer skills into different aspects of a course like the Clinical Continuum.

The aim of an integrated curriculum is to lead students to a level of scientific fluency that is beyond mere fact and concept acquisition, by the use of a common language of medical science, with which they can begin to think creatively about medical problems.¹⁹

This innovative new curriculum has been structured in a way such that it facilitates horizontal and vertical integration between disciplines; and bridges the gaps between both theory & practice, and between hospital-based practice and community practice. The amount of time devoted to basic and laboratory sciences (integrated with their clinical relevance) would be the maximum in the first year, progressively decreasing in the second and third year of the training, **making clinical exposure and learning more dominant.**¹¹ However it may differ from course to course depending on the professional group.

Learning methodologies

With a focus on self-directed learning, the curriculum will include a foundation course that focuses on communication, basic clinical skills and professionalism; and will incorporate clinical training from the first year itself. It is recommended that the primary care level should have sufficient clinical exposure integrated with the learning of basic and laboratory sciences. There should also be an emphasis on the introduction of case scenarios for classroom discussion/case-based learning.

Healthcare education and training is the backbone of an efficient healthcare system and India's education infrastructure is yet to gain from the ongoing international technological revolution. The report '*From Paramedics to Allied Health: Landscaping the Journey and way ahead*', indicates that teaching and learning of clinical skills occur at the patient's bedside or other clinical areas such as laboratories, augmented by didactic teaching in classrooms and lecture theatres. In addition to keeping up with the pace of technological advancement, there has been a paradigm shift to outcome-based education with the adoption of effective assessment patterns. However, the demand for demonstration of competence in institutions where it is currently limited needs to be promoted. The report also mentions some of the allied and healthcare schools in India that have instituted clinical skill centres, laboratories and high-

fidelity simulation laboratories to enhance the practice and training for allied and healthcare students and professionals. The report reiterates the fact that simulation is the replication of part or all of a clinical encounter through the use of mannequins, computer-assisted resources and simulated patients. The use of simulators addresses many issues such as suboptimal use of resources and equipment, by adequately training the manpower on newer technologies, limitations for imparting practical training in real-life scenarios, and ineffective skills assessment methods among others.¹ The table mentioned below lists various modes of teaching and learning opportunities that harness advanced tools and technologies.

Table 1 Clinical learning opportunities imparted through the use of advanced techniques^{1,20}

| Teaching modality | Learning opportunity examples |
|---------------------|---|
| Patients | Teach and assess in selected clinical scenarios |
| | Practice soft skills |
| | Practice physical examination |
| | Receive feedback on performance |
| Mannequins | Perform acquired techniques |
| | Practice basic procedural skills |
| | Apply basic science understanding to clinical problem solving |
| Simulators | Practice teamwork and leadership |
| | Perform cardiac and pulmonary care skills |
| | Apply basic science understanding to clinical problem solving |
| Task under trainers | As specific to Operation Theatre Technology |

Assessment methods

Traditional assessment of students consists of the yearly system of assessments. In most institutions, assessments consist of internal and external assessments, and a theory examination at the end of the year or semester. This basically assesses knowledge instead of assessing skills or competencies. In competency-based training, the evaluation of the students is based on the performance of the skills as per their competencies. Hence, all the three attributes – knowledge, skills, and attitudes – are assessed as required for the particular competency.

Several new methods and tools are now readily accessible, the use of which requires special training. Some of these are given below:

- Objective Structured Clinical Examination(OSCE), Objective Structured Practical Examination (OSPE), Objective Structured Long Examination Record(OSLER)
- Mini Case Evaluation Exercise(CEX)
- Casebased discussion(CBD)
- Direct observation of procedures(DOPs)
- Portfolio
- Multi-source feedback
- Patient satisfaction questionnaire

An objective structured clinical examination (OSCE) is used these days in a number of allied and healthcare courses, e.g. Optometry, Physiotherapy, and Radiography. It tests the performance and competence in communication, clinical examination, and medical procedures/prescriptions. In physiotherapy, orthotics, and occupational therapy, it tests exercise prescription, joint

mobilization/manipulation techniques; and in radiography it tests radiographic positioning, radiographic image evaluation, and interpretation of results. The basic essential elements consist of functional analysis of the occupational roles, translation of these roles (“competencies”) into outcomes, and assessment of trainees' progress in these outcomes on the basis of demonstrated performance. Progress is defined solely by the competencies achieved and not the underlying processes or time served in formal educational settings. Most methods use predetermined, agreed assessment criteria (such as observation check-lists or rating scales for scoring) to emphasize on frequent assessment of learning outcomes. Hence, it is imperative for teachers to be aware of these developments and they should suitably adopt them in the allied and healthcare education system.

Background of the profession

Statement of Philosophy– Why this profession holds so much importance

An estimated 456 million people of India’s population of 1.12 billion people require vision correction (spectacles, contact lenses or refractive surgery) to be able to see and function for learning, work and life in general. Twenty six million people are blind or vision impaired due to eye disease. A further 133 million people, including 11 million children, are blind or vision impaired simply from lack of an eye examination and an appropriate pair of glasses (uncorrected refractive error).

Blindness and vision impairment place a significant economic burden on families, communities and society at large – due to lost productivity, as well as the cost of education and rehabilitation²². About 85% of all vision impairment and 75% of blindness globally could be avoided²³, prevented or cured if the appropriately trained personnel and care facilities existed. The World Health Organisation (WHO) and the International Agency for the Prevention of Blindness (IAPB) launched the global initiative VISION 2020: the Right to Sight to eliminate avoidable blindness and vision impairment.

Uncorrected refractive error is the major cause of avoidable vision impairment, and the second most common cause of blindness²⁴. *“Without appropriate optical correction, millions of children are losing educational opportunities and adults are excluded from productive working lives, with severe economic and social consequences. Individuals and families are pushed into a cycle of deepening poverty because of their inability to see”*²⁵.

In 2007, an estimated 456 million people of India’s population of 1.12 billion people required vision correction (spectacles, contact lenses or surgery) to be able to see and function for learning, work and general life activities^{26,27}. This included 37 million children younger than 16 years of age²⁸. Almost all of these 456 million adults and children would have normal vision if they had access to an eye examination and an appropriate pair of spectacles. However, lack of access has left 133 million of them, including 11 million children, blind or vision impaired from uncorrected refractive error.^{29,30,31}

The burden³² of avoidable blindness and vision impairment on the health care system in India is significant, with India currently having the highest number of blind people in the world³³. The direct and indirect cost, including lost productivity, due to uncorrected refractive error in India has been estimated at \$23 billion per year (I\$269 billion globally)³⁴. As the population ages, future demand for eye care services will increase substantially. Enhancing access to these services will require an increase in the number of eye care professionals, as well as more efficient utilisation of existing professionals.

Optometry is recognized by the World Health Organization (WHO) as an independent profession through its ongoing official relations with the World Council of Optometry (WCO) – the international optometric organization which represents almost 300,000 optometrists from 87 member organizations in 47 countries.

Optometry as a profession has the primary public health responsibility for eliminating uncorrected refractive error. To provide excellent vision care to all the people of the country, India needs 116,000 optometrists. India currently has approximately 9,000 4-year trained optometrists and an estimated 30,000 2-year trained eye care personnel.

About Optometry

Optometry means a health care profession that is autonomous and concerned especially with examining the eye for defects and faults of refraction, with prescribing correctional lenses, eye exercises and/or visual rehabilitation care for visually impaired, with diagnosing diseases of the eye, and with treating such diseases or referring them for treatment.

Optometry as a profession has the primary public health responsibility for eliminating uncorrected refractive error (the leading cause of vision impairment globally). As primary eye care practitioners, optometrists have a vital role in detecting potentially serious eye diseases such as cataract, glaucoma and Diabetic retinopathy, age-related maculopathy, as well as general health conditions such as hypertension and diabetes, which means optometrists can also help alleviate the burden of other causes of blindness through diagnosis, referral and in some cases co-management. Optometry can and should play a leading role in eye care provision at the primary level, and can also assist at secondary and tertiary levels where possible, working with ophthalmologists and other eye care providers towards the unified goal of combating blindness.

Recognition of Title and qualification

The recommended title for this group of professionals stands as the ‘Optometrist’.

It is a known fact that with the career advancement, the nomenclature will also vary and will also depend on the sector and profile of the professional. Considering the 10 NSQF levels designed by the NSDA, the following level progression table has been proposed by the taskforce to map the nomenclature, career pathways and progression in different sectors of professional practice for Optometrist. **The proposed progression is for further discussion and deliberation, the implementation time of the same may vary depending on the current system and regulations in place.**

Definition of Optometrist

“Optometrists are primary health care practitioners of the eye and visual system who provide comprehensive eye and vision care, which includes refraction and dispensing, detection/diagnosis and co-management of disease in the eye and the rehabilitation of conditions of the visual system”

Optometrist also means a person having-

- i. Graduate degree in optometry obtained after the completion of a full time course of 4 years(baccalaureate) which includes supervised clinical training from any university recognized by the University Grants Commission established under the University Grants Commission Act 1956; or*
- ii. Post graduate degree in optometry after completion of a full time course of two years and /or PhD in the same.*
- iii. Diploma in ophthalmic techniques/ Diploma in optometry will be considered as entry level until 2020. The program will be phased out and the diploma will be encouraged to upgrade to degree through lateral entry courses. After this period they will not be designated as Optometrist.*

Education of the Optometry

When developing any education programme it is necessary that programme planning should be outcome-based, meeting local and national manpower requirements, personal satisfaction and career potential for the professionals with supporting pathway in the development of the profession. One of the major changes is the shift from a focus based on traditional theoretical knowledge and skills to competency based education and training. Optimal education/training requires that the student is able to integrate knowledge, skills and attitude in order to be able to perform a professional act adequately in a given situation.

Thus, the following curriculum aims to focus on skills and competencies based approach for learning and are designed accordingly. The curriculum is prescriptive and is designed with an aim to standardize the content across the nation. As stated above the focus of the profession is to create qualified and skill manpower in the field of Optometry through the following levels of higher education –

1. Bachelor of Optometry (B. Optom)
2. Master of Optometry (M. Optom)
3. PhD

Job Opportunities:

The job sectors for optometrist can be divided into the following areas:

1. Corporate sector
2. Private practice
3. Work for an optical chain or under an optical store
4. Public health
5. Industries/companies
6. Eye care hospitals & institutions
7. Education sector
8. Scientific research

The aims of the recommended curriculum are to produce Optometrist who are-

- Technically and clinically competent;
- Understand the theoretical basis for evidence based practice;
- Independently competent in vision care as defined;
- Effective members of the multidisciplinary team;
- Prepared to participate in or initiate research into practice;
- Can work according to registration requirements on the respective continents.

Introduction:

Learning Objectives: At the completion of this course, the student should -

1. Be able to develop skills to provide comprehensive eye examination
 - a. To acquire knowledge on ocular structures, its functions and pathological changes
 - b. To carryout ophthalmic investigations
 - c. To impart knowledge with regard to common eye diseases
 - d. To impart knowledge on treatment modalities from the perspective of counselling
 - e. To acquire knowledge about the referral guidelines for ocular and systemic conditions
2. Be able to correct refractive error and provide spectacle prescription
3. Be able to fit, evaluate, prescribe and dispense contact lenses for refractive correction and other ocular conditions
4. Be able to assess the low vision and provide comprehensive low vision care
5. Be able to have adequate knowledge to develop skill in manufacturing of spectacle lenses, contact lenses and low vision devices.
6. Be able to do complete binocular vision assessment, manage non-strabismic binocular vision anomalies and refer condition which warrants surgery
7. Be able to assess the visual demands for various occupations and match it to the visual capabilities. Also be able to advice on eye safety wear for various occupations.
8. Have knowledge and skill for early detection of various ocular conditions and pathologies –Refractive error, Strabismus, Cataract, Diabetic retinopathy, Glaucoma etc.
9. Have knowledge regarding organizations of eye banks and preservation of ocular tissues.
10. Have knowledge on sensory substitution and other rehabilitation measures for totally visually challenged.
11. Have knowledge of counselling on visual/ocular hygiene, nutritional and environmental modifications

Expectation from the future graduates in the providing patient care.

1. Optometrist will work independently or in conjunction with other eye/health care professionals.
2. The optometrist will be knowledgeable, skilful and analytical in diagnosis, treatment planning, management of visual defects & impairments and in co-managements of ocular conditions.

3. The optometrist can work in hospitals (both private and public sectors), optical outlets and/or work as independent practitioner
4. The course will lead to a basic degree in optometry, which is considered as the minimum essential for statutory registration of optometrists in countries where optometry has been brought under legislation.
5. Undertake public health optometry projects and vision screening eye camps in schools, colleges, urban slums, rural areas and also practice occupational optometry in industries.
6. Public education on ocular hygiene and related nutritional and environmental counselling.
7. Offer a helping hand and or efficiently manage and successfully run any ophthalmic clinic, optometry department in hospitals, optical shops, and offer product expertise in ophthalmic industry & trade.

Preamble

Present nomenclature- Those with SSLC qualification enter the three year's COT course called the first, second and third year COT respectively. Those with PUC qualification enter the two year's DOT course called the first year and second year DOT respectively. Second year COT and first year DOT students are combined and third year COT and second year DOT are combined for teaching and exams. This nomenclature is creating confusion in the minds of teachers, students and evaluators every time. Hence it is proposed as follows:

Single nomenclature-paramedical Ophthalmic assistant's course-“D.O.T. – DIPLOMA IN OPHTHALMIC TECHNIQUES”

Second Year Diploma in Ophthalmic Technique

Paper - 1

SECTION-A

Q P Code: 5161

Syllabus:

1. Anatomy of the eye and orbit.

Anatomy of the eye and orbit to be taught so that they can correlate the anatomical basis for the diseases and their treatment which will be taught subsequently. Anatomy of the eyelids and lacrimal apparatus should also be stressed upon. The topic need not be taught in depth like MBBS students. Structures can be demonstrated on models, Atlas or human cadaver. Structures of the eye are best demonstrated on human cadaver donor eyes obtained from eye banks.

2. Physiology of the eye:

Candidates must be taught the various normal functions of the different structures of the eye and orbit in brief. The four types of visual perceptions (Light, form, color, contrast sense). Physiology of vision, visual acuity, visual field, color vision. The principles and use of Snellen's chart, near vision charts, finger confrontation visual field testing, perimetry and Ishihara's chart. Formation and drainage of aqueous humor, Intraocular pressure and its importance. Production and drainage of tears in brief. Importance of normal tear film. Explanation of binocular single vision, understanding ocular movements, accommodation and convergence

3. Physical Optics and Physiological optics.

Laws of reflection and refraction. Uses of various mirrors in Ophthalmology. Concave, Convex and Cylindrical lenses, Prisms and their application in Ophthalmology. Optical system of the normal eye. Definition and diagrams of emmetropia, myopia, hypermetropia, various types of astigmatism, presbyopia, aphakia.

4. Practice of refraction.

Retinoscopy—(the most important method of estimating the refraction objectively), Optics of retinoscopy (3 stages). Various types of retinoscopes (Reflecting, self illuminating; Spot and streak retinoscope). Practice of retinoscopy. Cycloplegics in refraction- their indications and limitations. Post cycloplegic test. Difficulties in retinoscopy. Trial frame, trial set and its accessories. Standard notation of axis of cylinder.

Alternative methods of estimation of refraction- Refractometers (including automated), Keratometry, A scan.

Subjective verification of refraction- Fogging technique, Duochrome test, Jacksons cross cylinder and its uses, Astigmatic fan, Correction of near vision.

SECTION-B

Q P Code: 5162

5. Assessment of visual function

a> Visual acuity – Theory and practice of testing visual acuity for distance and near. Various charts used for testing visual acuity, testing visual acuity in all age groups, Notations for recording visual acuity. Pin hole testing- its importance in visual acuity testing.

b> Field of vision – Confrontation testing, Techniques of Static (Automated) perimetry.

c> Color vision – defects of color vision and their importance, testing of color vision especially Ishihara chart.

d> Binocular vision -Synaptophore (Amblyoscope), stereoacuity tests (TNO, Frisby etc.)

e> Errors of refraction – Ametropia and its correction by various methods, Anisometropia and its importance (especially unilateral Aphakia), Presbyopia and

its management , accommodation and convergence – its measurement and anomalies.

6. Making and fitting of spectacles:

Transposition of lenses (simple and toric), Identification of lens types and determination of its power (Neutralisation method and focimeter), IPD measurement and its importance, Various types of spectacle frames (material, design etc) , Various types and designs of prescription lenses (Tinted, U.V. filters, Photochromic lenses, Antireflection coatings, high index lenses, Bifocals, Multifocals) etc.

Low visual aids – applications.

7. Alternatives to spectacles – 1. Contact lenses: Indications, Contraindications, advantages, disadvantages and dangers

2. Refractive surgeries: LASIK, Phakic IOL's, etc.

Examination Pattern:

Theory Max 100 marks (Part A-50 marks & Part B-50 marks)

- | | |
|---------------------------------|---------------|
| 1. Short notes- answer any four | 4*5=20marks |
| 2. Short answers | 10*3=30 marks |
| Total | 50 marks |

Practicals 100 marks

Pattern of practicals :

10 spotters 2 mark each - 20 marks (2 mins each)

Two special procedures to be described 30 marks each – 60 marks (I hour)

Practical Record -10 marks

Viva voce -10 marks

Paper - II

SECTION-A

Q P Code: 5163

1. Common eye diseases: These are covered in brief so that the students are able to differentiate minor non vision threatening and major vision threatening/ life threatening diseases, decide how urgently patients are to be referred to Ophthalmologists. They must also be in a position to educate patients about prevention of common diseases like vitamin A deficiency, ophthalmia neonatorum, corneal ulcers, injuries, and preventing blindness due to glaucoma and diabetic retinopathy. Conjunctivitis and its treatment, prevention of spread of conjunctivitis. Corneal ulcers, importance of proper management of corneal abrasions and foreign bodies, prevention, seriousness and urgency of management of corneal ulcers. Iritis, Blepharitis, lid infections, chalazion, dacryocystitis, lacrimal syringing proper method and interpretation, iritis,

2. Ophthalmic emergencies , first aid and indications for referral.

Injuries- chemical and mechanical- first aid management of chemical injuries, protecting the eye, applying a shield,

Corneal ulcer, Acute iritis and acute glaucoma

Orbital cellulitis, panophthalmitis.

Patient presenting with sudden loss of vision.

3. Cataract- definition, Magnitude of cataract blindness, types, diagnosis, vision media disparity, conservative management with refractive correction, indications for surgery, types of surgery, complications of hypermaturity, importance of ruling out coexisting glaucoma and retinal or optic nerve diseases, relevant systemic and local investigations before cataract surgery, Biometry. Post operative care and follow up of cataract surgery patients. Post operative spectacle correction.

SECTION-B**Q P Code: 5164**

4. Glaucoma. What is glaucoma, importance of IOP(digital, schiötz, applanation, noncontact tonometry), Visual fields, importance of understanding that disc examination is very important during every refraction testing, long term follow up.

5. Squint: Types of squint, its importance in causing amblyopia especially in children, cover test, assessment of BSV and stereoacuity tests.

6. Systemic diseases.

Vitamin A deficiency- prevention and prompt management to prevent morbidity and blindness.

Diabetes and Hypertension as a cause of blindness and prevention and management of blindness due to these diseases.

Teaching Time Schedule – as at present

Examination pattern –suggested below are two options.

Examination Pattern:

Theory Max 100 marks(Part A-50 marks & Part B-50 marks)

- | | |
|---------------------------------|---------------|
| 1. Short notes- answer any four | 4*5=20marks |
| 2. Short answers | 10*3=30 marks |
| Total | 50 marks |

Practicals 100 marks Pattern of practicals :

10 spotters 2 mark each - 20 marks (2 mins each)

Two special procedures to be described 30 marks each – 60 marks (I hour)

Practical Record -10 marks

Viva voce -10 marks

| Paper | SUBJECT | SECTION | Question paper Code | MAX. MARKS |
|--------------|---------------------|----------------|----------------------------|-------------------|
| Paper 1 | Paper - I | Section A | 5161 | 50 |
| | | Section B | 5162 | 50 |
| | Practical | | | 100 |
| Paper 2 | Paper - II | Section A | 5163 | 50 |
| | | Section B | 5164 | 50 |
| | Practical | | | 100 |
| | Log book assessment | | | 100 |

ThirdYear Diploma in Ophthalmic Technique

Paper - I

SECTION-A

Q P Code: 6161

1.Nursing care of Ophthalmic patients.

PreOperative preparation for various Ophthalmic surgeries, trimming of eye lashes.

Preparation of the eye and ocular dressings.

Bed making and laying dressing trolley in the wards.

Shifting blind/ophthalmic patients from Ward to OT etc.

2. Theoretical basis for work in ophthalmic Operation Theatres.

OT Aseptic techniques,prevention of infections in ophthalmic operative procedures, prevention of transmitting infections from patients to hospital staff like HIV and HbSAg. Fumigation, sterilization,packing sterilization bins, applying indicators for autoclaving, ETO Sterilization, various types of autoclaves

O.T. Cleaning and maintenance.

Surgical Instruments used in common eye surgeries like cataract, glaucoma, squint, lid surgeries, lacrimal apparatus,chalazion, keratoplasty and retinal surgeries-names of instruments, how to assist using these instruments, cleaning and proper maintenance of the same.Laying the OT trolley for various eye surgeries.

Operating microscope- importance of preventing damage to microscope, especially the optics and electrical connections, IPD setting, sterile caps for the microscope, care of the foot switch, etc.

Phaco machine uses and how to get it ready for surgery- tubings, vitrectomy hand piece, Phaco hand piece, Irrigation aspiration headpiece etc.

Various sutures used in ophthalmology (both intraocular and extraocular), their sterilisation

SECTION-B

Q P Code: 6162

Anesthesia machine, gas cylinders including their color coding, Connecting cardiac monitors, endotracheal tubes, use of suction apparatus, Drugs used in GA cases, Role of paramedical Ophthalmic assistants in looking after a GA case.

Use of diathermy and cryomachines,

I.V. Line Principles, starting and care of I.V line, Commonly used I.V. fluids

Scrubbing techniques, gowning, gloving, etc.

Proper disposal of OT waste, segregation of OT waste, color coding of disposal bins/ covers.

General work culture and discipline in OTs. Maintenance of OT registers and case sheets.

3. ophthalmic diagnostic equipments names and how to use them.

Trial set, retinoscopes, keratometer, A Scan biometer, lens meter, Slit lamp biomicroscope, direct and indirect ophthalmoscope, pachymeter, maintenance of tonometers, BP checking, Use of a glucometer.

Maintenance of set of fuses, bulbs for the slit lamp and operating microscope, periodic calibration of instruments like keratometer, applanation tonometer, etc.

Examination Pattern:

Theory Max 100 marks (Part A-50 marks & Part B-50 marks)

- | | |
|---------------------------------|---------------|
| 1. Short notes- answer any four | 4*5=20marks |
| 2. Short answers | 10*3=30 marks |
| Total | 50 marks |

Practicals 100 marks

Pattern of practicals :

10 spotters 2 mark each - 20 marks (2 mins each)

Two special procedures to be described 30 marks each – 60 marks (I hour)

Practical Record -10 marks

Viva voce -10 marks

Paper - II

SECTION-A

Q P Code: 6163

1. Emergency resuscitation- CPR

2. Records and statistics – OPD and IPD records, consent forms, ICD-10, Surgical records- OT lists, OT registers, Medicolegal registers, maintaining various investigation reports.

3. Community eye health- epidemiology of blindness, definition of blindness, preventable/irreversible blindness

a> NPCB and DBCS, role of eye camps

b> School eye screening- importance of examination of each eye separately for vision, anisometropia and squint and its importance in causing lazy eye (amblyopia)

c> Eye bank overview- eye donation forms, motivation for eye donation, enucleation of donor eyes, storing transporting and proper utilization of donor tissue, maintenance of records. Facts and myths of eye donation.

Rehabilitation of the blind.– Medical rehabilitation, Training and psychosocial rehabilitation, educational rehabilitation, Vocational rehabilitation, Visual disability certificate percentage etc.

Basic eye health education of the community – Importance of treating Anisometropia in school children to prevent amblyopia, importance of fundoscopic examination in patients even with good vision, danger of indiscriminate use of over the counter medications especially steroid eye drops, role of protective eye gear at the workplace, importance of fundoscopic examination at every spectacle change visit.

SECTION-B

Q P Code: 6164

4. Common symptoms in ophthalmology

Dimness of Vision: sudden loss, gradual loss, painful loss, painless loss, existence of serious disease without vision loss (glaucoma, extensive Diabetic retinopathy, hypertensive retinopathy, Papilledema), pain in and around the eye, red eye, watering, photophobia, white discoloration of cornea or pupil, headache, proptosis, swelling of lids.

5. Simple clinical signs in Ophthalmology.

Congestion, Loss of corneal window reflex, identifying corneal ulcer, identifying shallow Anterior chamber depth, Pupil size and reaction to light, dacryocystitis, lagophthalmos etc.

6. Common drugs used in Ophthalmology:

Various methods of drug administration: -drops, ointment, Injections- sub conjunctival, retrobulbar, intravitreal.

Topical- anti infectives, mydriatics, miotics, steroids, NSAIDS, fluorescein,- when to use and when not to use.

Commonly used Anti glaucoma drugs, contraindications, advising patients about proper use of antiglaucoma drugs.

Local and general anaesthesia in brief.

Oral pain killers commonly used.

Corticosteroids uses and dangers.

Among others practical knowledge of the following is mandatory

Vision recording, retinoscopy, prescription of glasses, lacrimal sac syringing, epilation, keratometric measurements, A scan for axial length measurement, mounting of phaco machine and adjusting the parameters of the machine surgery, common eye diseases – prevention and recognition.

Examination Pattern:

Theory Max 100 marks(Part A-50 marks & Part B-50 marks)

- | | |
|---------------------------------|---------------|
| 1. Short notes- answer any four | 4*5=20marks |
| 2. Short answers | 10*3=30 marks |
| Total | 50 marks |

Practicals 100 marks

Pattern of practicals :

10 spotters 2 mark each - 20 marks (2 mins each)

Two special procedures to be described 30 marks each – 60 marks (I hour)

Practical Record -10 marks

Viva voce -10 marks

| Paper | SUBJECT | SECTION | Question paper Code | MAX. MARKS |
|---------|---------------------|-----------|---------------------|------------|
| Paper 1 | Paper - I | Section A | 6161 | 50 |
| | | Section B | 6162 | 50 |
| | Practical | | | 100 |
| Paper 2 | Paper - II | Section A | 6163 | 50 |
| | | Section B | 6164 | 50 |
| | Practical | | | 100 |
| | Log book assessment | | | 100 |

Books:

- i. Parson's Diseases of Eye by Mayo and worth
- ii. Ophthalmic Assistant Refraction by Duke Elder Ahmed or Khurana (Diseases of eyes)

Reference:

- i. Clinical Ophthalmology by Kanski
- ii. DBCS Manuals by Govt. of India.