

**KRISHNA INSTITUTE OF MEDICAL SCIENCES
“DEEMED TO BE UNIVERSITY”, KARAD**

Diploma in Ophthalmic Technology
(Program Code- 1807) (Course Code- 1807-11)

Syllabus for Diploma in Ophthalmic Technology (DOT)

1st Year

<u>Basic Sciences,12th standard with minimum 50% marks</u>		
I) Anatomy & physiology of the Eye		
Anatomy of Eyeball	Eyelid & Conjunctiva	Gross and microscopic anatomy, muscles and glands
	Lacrimal apparatus	secretary and drainage portion
	Extra ocular muscles	gross anatomy and insertions, blood and nerve supply
	Cornea and Sclera	Gross and microscopic anatomy, blood supply , various insertions and attachments of sclera, nerve supply of cornea
	Iris, Ciliary body and Choroid	Gross and microscopic anatomy, muscles, blood supply , nerve supply
	Retina and optic nerve	Gross and microscopic anatomy, muscles, blood supply , nerve supply
	Lens and Vitreous	Gross and microscopic anatomy of lens and vitreous
	Visual pathway	Gross anatomy
	Anterior chamber angle	Structure of angle and gradation of angle
Physiology of Vision	Ocular motility and basics in binocular Vision.	action of muscles, BSV, grades of BSV, advantages of BSV
	physiology of cornea	transparency and metabolism of cornea
	physiology of lens	transparency, metabolism of lens accommodation

	Pupillary reactions	Direct and consensual and their tests
	Color Vision	Theories and Tests
	Intraocular Pressure aqueous humor	Aqueous humor dynamics, formation, composition, circulation and drainage. IOP, factors affecting IOP
	Visual fields	Normal uniocular and binocular fields, defects, tests
II) Microbiology:		
Introduction to Microbiology	Classification of Microorganisms	Collection of Swabs – Staining, culture.
	Morphology of Bacteria, Fungi, Viruses	Bacteria, Fungi, Viruses – affecting the Eye
III) Pathology		
Introduction to Pathology	Infection and Inflammation	Oedema, healing, repair
	Routine blood and urine examination	
IV) Basics in Ocular Pharmacology:		
Introduction to Pharmacology	General Aspects of Pharmacology and Prescription writing	pharmacodynamics
	Routes of delivery of ophthalmic drugs	Systemic, and local routes
	Common Ophthalmic drugs - Classification/uses/examples	Astringents, decongestants, antibiotics, antiviral, antifungal, drugs acting on autonomic N system, anesthetics, antiglaucoma, corticosteroids, NSAID.
Common Eye Diseases: Names/Clinical signs/symptoms and brief management		
Diseases of Eyelids, Orbit,	Entropion, Ectropion, Trichiasis, distichiasis,	blepharitis, Styne, trachoma, Ptosis, chalazion, Orbital cellulitis,
Adnexa	Eyebrows, Lacrimal apparatus	Dacryocystitis, Dry eye syndrome, watering eye
Diseases of Conjunctiva, cornea	Pterigium, Pinguicula, subconjunctival hemorrhage,	Keratitis, conjunctivitis, vit. A deficiency, xerophthalmia,, corneal ulcers, degenerative diseases of cornea - Arcussenilis, keratoconus, keratoglobus, microcornea, megalocornea
Diseases of Sclera, Uvea	scleritis, episcleritis, uveitis, Iritis, Iridocyclitis,	choroiditis, aniridia, endophthalmitis, panophthalmitis, pupillary anomalies - shape and reaction
Diseases of Lens	cataract,	aphakia, PCO, subluxation and dislocation of lens - Ectopia lentis

Glaucoma	IOP,	congenital , POAG, PACG, secondary glaucoma, investigations and treatment
Diseases of vitreous and Retina	vitreous detachment, hemorrhage, opacities,	hypertensive, diabetic retinopathy, ROP, CRAO, CRVO, BRVO, color blindness, maculopathy, retinal detachment, ARMD, RP
Trauma		mechanical- blunt, penetrating, chemical, thermal, foreign bodies
Systemic diseases and eye	Ocular signs of systemic disease.	
Orientation to Clinical techniques and preoperative workup	history taking, Blood pressure,	torch examination, Visual acuity, tonometry, Sac syringing
Optics & Refraction (Total Lectures 30)		
Properties of light,	concept of light, wavelength, amplitude,	propagation of light, refractive index of various media, Principles of Reflection and Refraction of light; laws of reflection and refraction
Lenses and	their combinations,	definition, types, forms, cardinal points, identification of lens power
Transposition of spectacle lenses		plus and minus spherocylinder, optical cross, two cylinder forms, simple and Toric transposition
Human eye as a optical system,	Visual Angles, Visual Acuity and Visual Axes	Schematic eye, cardinal points of eye, image formation, various axes, visual acuity- factors affecting, recording acuity for distance and near with various charts.
Refractive errors	Hypermetropia, Myopia, Astigmatism, Anisometropia&Aniseikonia	definition, optical diagram, classification, etiology, clinical picture, treatment
Accommodation and Convergence	definition, range, amplitude, mechanism, measurement, anomalies	presbyopia
Low vision aids	Commonly used optical & non optical devices for visually impaired	Optical, non optical and electronic LVA, introduction to rehabilitation.

Second Year

Community Eye care

Definition, Causes and magnitude of blindness and visual impairment	legal, economic, social, preventable, curable, absolute blindness, low vision- causes, types.
Definition, causes, magnitude and classification of childhood blindness	
comprehensive eye care	primary, secondary, tertiary eye care
Rehabilitation	Introduction to social, vocational and emotional rehabilitation.
Eye banking and Death Counseling	concept, structure, procedure of eye bank, required instruments, consent taking
Organization of Health Services Principles of Primary Secondary tertiary care	PHC- rural hospital, district hospital, regional centers, medical college hospitals, referral system
Introduction to occupational Health, hygiene and septic	occupational health and hazards, visual tasks, illumination, risk of injury, common accidents, prevention of hazards and minimizing risk
OTA's role as a primary health care professional	knowledge and skills of OTA, duties of OTA
Prevention of ocular accidents	safety measure, safety equipments/ eyewear
Screening procedures in the fields -	Pediatrics, Phorias/Tropias/Amblyopias, Vit. A deficiency, refractive errors
	Adults- cataract, glaucoma, refractive error
Optometric investigations and research for community	introduction to qualitative and quantitative research methodology, data collection
Public Health Optometry–human resources, Epidemiology and projection	epidemiology of blindness, magnitude of problem, vision 2020
OT management, equipment care and surgery assistance	
I) Operation Theatre assistance	(Total Lectures 20)
General aspects	Sterilization and Disinfection, Cleaning of surgical instruments
Theatre set up	Introduction to surgical instruments and operating room equipment
Surgical Scrubbing	Surgical Preparation and Draping
Laying the trolley for minor surgery	Fumigation
	Autoclaving/sterilization of instruments
II) Care & maintenance of commonly used Ophthalmic equipments: Total Lectures 10	
Torch light	Trial frame
Ophthalmoscope	Slit lamp

Retinoscope	Microscope
Phacoemulsification	Applanation tonometer
Vitrectomy	
Clinical Techniques and Dispensing Glasses	
I) Clinical Techniques –	
Visual acuity assessment	recording acuity for adults and children, at distance and near, aided-unaided, pinhole acuity, BCVA, binocular acuity
Retinoscopy	static and dynamic
Subjective Refraction	subjective correction, Duochrome test & Jackson's cross cylinder
Lensometry	star and dot mires, finding power of unknown lens / spectacle, axis marking
Slit lamp examination	techniques of SLE, when to use and procedure
Tonometry	schiotz, Applanation, Non contact
Direct Ophthalmoscopy	Fundus examination
Colour Vision test	ischiyara test
Visual fields	screening- confrontation, static dynamic perimetry
Syringing and lacrimal function tests	Syringing, probing- instruments required, procedure, evaluation. TBUT, schirmer test.
Keratometry	quantitative and qualitative tests- placido disc, recording K reading, uses
Pachymetry	introduction to optical and ultrasound methods
A Scan and IOL power calculation	procedure, handling and care of instrument
II) Dispensing Optics :	
forms and types of Lenses	forms, type, materials advantages and disadvantages
Parts and types of frames	parts, types, material and markings on frame
Inter Pupillary Distance measurement	Significance
Bifocals and Multifocals	kryptok, D BF, ExBF, advantages and disadvantages, introduction to trifocal and PAL
Protective and special purpose lenses	introduction to safety/ toughened lenses, tinted and photo chromatic lenses
Manufacturing of lenses*	Surfacing demonstration
Fitting & grinding of lenses	types of edges, practical demonstration
Secretarial Skills	
Initial Patient Contact and Reception and Ethics	History Taking
Preparation of case sheet	Telephone & Office manners

Opening & sending email	Maintenance of medical records and their retrieval
Patient counseling	Helping the blind & visually impaired to navigate in the premises
Functional English and Computer Fundamentals	
I) Computer Fundamentals	
Introduction to Computers-	Computer Hardware, Input Output devices, peripherals
MS-Office (Overview)	MS-Word ; MS-Excel; MS-PowerPoint
Use of internet	use of search engine, opening and sending email
II) Functional English	
English used in communication – letter drafting	Simple sentences
Tenses	Nouns, Verbs, adjectives
Translation, Unseen passage	