



SunRise University

Approved by Govt. of Rajasthan vide Sunrise University Act, 2011
Recognized by UGC Act, 1956 u/s 2 (f)

Syllabus of Certificate in Optometry Technician course

SunRise University

Semester-I

Subject Code	Course	Internal	External	Total
COTC101	Basic of General Anatomy & Physiology	40	60	100
COTC102	Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	40	60	100
COTC103	Details of Diseases of eye	40	60	100
COTC104	Mechanical optics and Lenses, Lensesprescription	40	60	100
COTC105	Oral & Practical	60	40	100
TOTAL		220	280	500

Certificate in Optometry Technician

PAPER 1st Theory	Topics	Hours.
1. Only basic idea of General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).	1. General Orientation about parts of human body. Various terms used in Anatomy. Total numbers of bones, their names & location. Basic idea about organization of body, from cell to organ systems.	02Hrs
	2. Structure of Animal cell, Cell organelles & their functions	02 Hrs
	3. Human tissue, types, structure & functions.	05 Hrs
	4. Osteology: Names, location, identification of all bones. (Details of skull bones is not required).	10 Hrs
	5. Joints: types, basic structure & examples.	02 Hrs
	6. Skin & appendages.	02 Hrs
	7. GIT: : Location, Gross structure, various parts & their functions. Details of process of food ingestion, digestion, absorption & defaecation. (Microscopic structure is not required.)	20 Hrs
	8. Respiratory tract: Location, Gross structure, various parts & their functions. Details of breathing mechanism, different respiratory volumes. (Microscopic structure is not required.)	20 Hrs
	9. Urinary tract: Gross structure, various parts & their functions. (Microscopic structure is not required.) Process of urine formation & voiding.	10 Hrs
	10. Male reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.)	05 Hrs

	11. Female reproductive system: Only gross structure & functions of different parts. (Microscopic structure is not required.) Menstrual cycle.	05 Hrs
--	--	--------

SunRise University

Certificate in Optometry Technician

PAPER 1st Theory	Topics	Hours.
1.Only basic idea of General Anatomy & Physiology (Cytology, Histology, Osteology and only basics of all organ systems of body).	12. Endocrine system: Hormones secreted by Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal cortex, Adrenal medulla, Gonads & functions of different hormones. (Details of structure of these glands not required).	10 Hrs
	13. Gross structure of brain & spinal cord. Functions of different parts of brain & spinal cord.(Details not required.)	10 Hrs
	14. Blood: Composition & Functions. Details about Plasma, RBCs, WBCs, Platelets, Clotting system.	10 Hrs
	15. Gross structure & functions of sensory Organs - Eye, Ear, Nose, Tongue.(Details not required).	05 Hrs
	16. Basic gross structure of heart, vessels opening into heart & Leaving the heart. Arterial & Venous tree of body.	10 Hrs
	17. Lymphatic system: Structure & Functions.	05 Hrs
	18. Inumune system: Components & various mechanisms of defense.	07 Hrs

Certificate in Optometry Technician

PAPER 1st Theory	Topics	Hours.
2.Only basics of relevant Pathology, Pharmacology, Microbiology & Ocular Pharmacology.	1. Basic steps of Acute & chronic inflammation.	03 Hrs
	2. Basics of Necrosis & apoptosis.	03 Hrs
	3. Basics of Shock.	03 Hrs
	4. Basics of Disorders of blood coagulation system.	08 Hrs
	5. Basics of Disorders of Immune system of body.	05 Hrs
	6. Modes of disease transmission & prevention of infection.	05 Hrs
	7. Sterilization & methods of sterilization used in hospitals.	10 Hrs
	8. Basic idea about types of Bacteria, Virus, Fungi.	20 Hrs
	9. Routes of drug administration.	02 Hrs
	10. Adverse effects & side effects of drugs.	02 Hrs
	11. Basic idea of Analgesics : Opioid & NSAIDs.	02 Hrs
	12. Basic idea of Anti Microbials.	20 Hrs
	13. Basic idea of Anti H-1 Histaminics & Corticosteroids.	02 Hrs
	14. Anti Glaucoma drugs.	15 Hrs
	15. Dyes used in Ophthalmology.	05 Hrs
	16. Artificial tears & Other drugs used in dry eye.	05 Hrs
	17. Topical Antimicrobials & NSAIDs and Steroids used in eye.	20 Hrs
	18. Mydriatics & Cycloplegics	05 Hrs
	19. Various methods of drug administration in eye.	15 Hrs

Certificate in Optometry Technician

PAPER 2nd Theory	Topics	Hours.
1.Detailed Ocular Anatomy and Physiology	1.Detailed Structure of Orbit & Contents of orbit.	10 Hrs
	2.Eye ball: Comprehensive anatomy.	05 Hrs
	3.Extra Ocular muscles: gross structure, origin, insertion, nerve supply and action.	10 Hrs
	4.Blood supply to eye & Nerve supply to eye.	15 Hrs
	5.Gross, microscopic anatomy, blood & nerve supply of Conjunctiva.	10 Hrs
	6.Gross, microscopic anatomy, blood & nerve supply of Cornea.	15 Hrs
	7.Gross, microscopic anatomy, blood & nerve supply of Sclera.	10 Hrs
	8.Gross, microscopic anatomy, blood & nerve supply of Uvea.	15 Hrs
	9.Gross, microscopic anatomy, blood & nerve supply of Lens.	10 Hrs
	10.Gross, microscopic anatomy, blood & nerve supply of Angle of AC.	05 Hrs
	11.Physiology of aqueous production and drainage.	10 Hrs
	12.Gross, microscopic anatomy, blood & nerve supply of Vitreous.	05 Hrs
	13.Gross, microscopic anatomy, physiology, blood & nerve supply of retina & optic nerve.	20 Hrs
	14.Gross, microscopic anatomy, physiology, blood & nerve supply of Visual/pupillary pathway.	20 Hrs

PAPER 2nd Theory	Topics	Hours.
2. Basic physics related to light and physical, physiological optics.	1.Introduction	05 Hrs
	2.Light – Definition & Theory	03 Hrs
	3.Properties of Light	05 Hrs
	4.Reflection & Refraction	07 Hrs
	5.Diffraction & Dispersion	05 Hrs
	6.Transmission & Absorption	05 Hrs
	7.Geometrical Optics	05 Hrs
	8.Spherical Lenses	05 Hrs
	9.Astigmatic & Toric Lenses	05 Hrs
	10.Prism	05 Hrs
	11.Vergence of Light	05 Hrs
	12.Magnification of Lenses	05 Hrs
	13.Homocentric Lenses System Gausse’s Theorem	05 Hrs
	14.Optical Aberration of images -Spherical Aberration - Chromatic Aberration	05 Hrs
	15.Lasers Fundamental	10 Hrs
	16.Schematic & Reduced Eye Angle Alpha	05 Hrs
	17.Visual Acuity	05 Hrs
	18.VA-Testing	15 Hrs
	19.Retinocopy	20 Hrs
	20.Cycloplegic Drugs & Mydriatics	05 Hrs
	21.Subjective Refraction	05 Hrs
	22.Simple & Toxic Transposition	05 Hrs
	23.Spherical Equivalent	05 Hrs
	24.Accommodation & Convergence	15 Hrs

PAPER 2nd Theory	Topics	Hours.
3.Hand hygiene & prevention of cross infection.	1. Hand hygiene & method of Hand washing.	15 Hrs
	2. Prevention of cross infection.	15 Hrs

PAPER 2nd Theory	Topics	Hours.
4.Basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	1. Code blue.	05 Hrs
	2. Details of basic life support (BLS) & Cardio-pulmonary resuscitation (CPR).	35 Hrs

	Topics
Practical	<ul style="list-style-type: none"> • Hands on training of Vision monitoring.
	<ul style="list-style-type: none"> • Hands on training of Subjective refraction.
	<ul style="list-style-type: none"> • Hands on training of Retinoscopy(wet and dry).
	<ul style="list-style-type: none"> • Hands on training of Prescribing lenses & prisms.
	<ul style="list-style-type: none"> • Hands on training of Tonometry (Schiotz).
	<ul style="list-style-type: none"> • Hands on training of Corneal staining.
	<ul style="list-style-type: none"> • Hands on training of Ishihara charting.
	<ul style="list-style-type: none"> • Hands on training of Schirmer's test & TBUT.

PAPER 1st Theory	Topics	Hours.
1.Details of Diseases of eye.	1. Common Symptoms in ophthalmology and Examination of eye.	15 Hrs
	2. Definition, Causes, s/s, investigations & management of error of refraction. (Myopia, Hypermetropia, Astigmatism, Presbyopia)	15 Hrs
	3. Definition, Causes, s/s, investigations & management of Diseases of Lacrimal apparatus. (Dacryocystitis, Lacrimal tumors, Dry eye, Watering of eye etc.)	15 Hrs
	4. Definition, Causes, s/s, investigations & management of Diseases of eyelids. (Ptosis, Lagophthalmos, blepharitis, sty, chalazion, int. hordeolum, Trichiasis, entropion, ectropion, Blepharospasm)	20 Hrs
	5. Definition, Causes, s/s, investigations & management of Diseases of Conjunctiva. (Conjunctivitis, Pterygium, Pinguecula, red eye, sub-conj. bleed)	15 Hrs
	6. Definition, Causes, s/s, investigations & management of Diseases of Cornea. (Keratitis, Cornealulcer, Corneal opacity, keratoconus, keraloplasty)	15 Hrs
	7. Definition, Causes, s/s, investigations & management of Diseases of Sclera. (Episcleritis, Scleritis & Staphyloma)	10 Hrs
	8. Definition, Causes, s/s, investigations & management of Diseases of uvea. (Uveities, endophthalmitis, Pan ophthalmitis)	15 Hrs
	9. Definition, Causes, s/s, investigations & management of Diseases of lens. (Cataract, Latest techniques in surgery of Cataract, Subluxation/dislocation of lens)	20 Hrs
	10. Definition, Causes, s/s, investigations & management of Diseases of Angle of AC. (Glaucoma)	20Hrs
	11. Definition, Causes, s/s, investigations & management of Diseases of Vitreous. (Vitreous haemorrhage, Vitreal opacities, Vitrectomy)	05Hrs
	12. Definition, Causes, s/s, investigations & management of Diseases of Retina (Diabetic & hypertensive retinopathy, RD, CSR, CME, Retinoblastoma, CRAO, CRVO, BRAO, BRVO Eale's disease)	20Hrs
	13. Definition, Causes, s/s, investigations & management of Diseases of Optic nerve. (Optic neuritis, papillaedema, Optic atrophy)	15Hrs

1.Details of Diseases of eye.	14. Destructive surgeries of eyeball	05Hrs
	15. Definition, Causes, s/s, investigations & management of Diseases of Strabismus	10Hrs
	16. Definition, Causes, s/s, investigations & management of Diseases of Orbit. (Proptosis, Orbital fracture, Orbital cellulitis)	05Hrs
	17. Community ophthalmology (Blindness, Various programmes related of blindness)	05Hrs
	18. Miscellaneous Vitamin A deficiency, Low vision aids, first aid in Ocular Injuries.	10Hrs
	19. Definition, Causes, s/s, investigations & management of Amblyopia	10Hrs
	20. Color blindness	05Hrs

PAPER 1st Theory	Topics	Hours.
2.Nursing Procedures like vital recording, IM/IV/SC injection, Oxygen therapy, Nebulization, IV infusion.	1. Temperature monitoring & Fever.	02 Hrs
	2. Pulse monitoring.	02 Hrs
	3. BP monitoring.	02 Hrs
	4. Respiration monitoring.	01 Hrs
	5. Types of Injection routes.	01 Hrs
	6. IM Injection.	01 Hrs
	7. IV Injection.	01Hrs
	8. SC Injection.	01 Hrs
	9. Oxygen Therapy.	03 Hrs
	10. Nebulization	03 Hrs
	11. IV Infusion (Also with infusion pump).	01 Hr
	12. Care of Unconscious patient.	02 Hrs

PAPER 2nd Theory	Topics	Hours.
1.Mechanical optics and Lenses, Lenses prescription.	1.A Brief History of Ophthalmic Lenses, Spectacles	05 Hrs
	2.Terms Used in Lens Workshop	05Hrs
	3.Ophthalmic Lens Material	20Hrs
	4.Lens Standard	10Hrs
	5.Ophthalmic Lens Blank Manufacture- Glass & Plastic	20Hrs
	6.Ophthalmic Prescription Lens Making	20Hrs
	7.Lens Defects	10Hrs
	8.Ophthalmic Lens Designs	20Hrs
	9.Types of Ophthalmic Lenses : Aspheric, High Index, Multifocal, Bifocal & Trifocal Lenses, Photo Chromatic Lenses, Polaroid Lenses, Tinted Lenses, Protective Lenses.	30Hrs
	10.Spectacles Frames: History, Nomenclature & Terminology, Classification.	10Hrs
	11.Types of Frame Material	10Hrs
	12.Types of Human Faces, Choice of Frames	10Hrs
	13.Cosmetic & Functional Dispensing of Spectacles	10Hrs
	14.Measurement for Ordering Spectacles : IPD, VD	10Hrs
	15.Special Measurement for Fitting Special Types of Lenses	10Hrs
	16.Fitting of Lenses in Various Types of frames	10Hrs
	17.Spectacles Intolerance	10Hrs
	18.Special types of Spectacles	10Hrs
	19.Dispensing of Prisms, Prismatic effect of lens	20Hrs
	20.Contact Lenses	20Hrs
	21.Low Vision Aids	10Hrs
	22.Magnification by Lenses	20Hrs

PAPER 2nd Theory	Topics	Hours.
2.Instruments and equipments used in eye.	1.Refractrometer	10Hrs
	2.Lensometer	05Hrs
	3.Keratometer	05Hrs
	4.Ophthalmoscope	10Hrs
	5.Slit Lamp	10Hrs
	6.Corneal Loupe	05Hrs
	7.Operating Microscope	05Hrs
	8.Perimeter	03Hrs
	9..Tonometer	05Hrs
	10.Gonioscope	03Hrs
	11.Pachymeter	02Hrs
	12.Exophthalmometer	02Hrs
	13.ERG, EOG, VER	05Hrs
	14.Orthoptic instruments like synoptophore etc	15Hrs
	15.A and B scan	05Hrs
	16.Retinoscopes	05Hrs
	17.Ishihra Chart	05Hrs

PAPER 2nd Theory	Topics	Hours.
3.Community ophthalmology.	Introduction	03Hrs
	National Programme for Control of Blindness	17Hrs
	National Immunization Programme	10Hrs
	Blindness : Causes and its Prevention	20Hrs

PAPER 2nd Theory	Topics	Hours.
4.Drugs used in Optometry.	1. Topical NSAIDS.	05Hrs
	2. Topical Steroids.	05Hrs
	3. Anti Glancoma drugs.	10Hrs
	4. Anti VEGF drugs.	05Hrs
	5. Cycloplegics & Mydriatics.	10Hrs
	6. Drugs used in dry eye.	10Hrs
	7. Dyes used in ophthalmology.	05Hrs
	8. Topical Antimicrobials.	10Hrs

	Topics
Practical	<ul style="list-style-type: none"> • Hands on training of slit lamp biomicroscope examination.
	<ul style="list-style-type: none"> • Hands on training of Gonioscopy.
	<ul style="list-style-type: none"> • Hands on training of Applanation tonometry.
	<ul style="list-style-type: none"> • Hands on training of Syringing.
	<ul style="list-style-type: none"> • Hands on training of Perimetry.
	<ul style="list-style-type: none"> • Hands on training of Keratometry, A scan.
	<ul style="list-style-type: none"> • Hands on training of B Scan.
	<ul style="list-style-type: none"> • Hands on training of Direct ophthalmoscopy.
	<ul style="list-style-type: none"> • Hands on training of Indirect Ophthalmoscopy.
	<ul style="list-style-type: none"> • Hands on training of assistance in Common Ocular surgeries.
	<ul style="list-style-type: none"> • Hands on training of Fundus Camera & FFA.