

CURRICULUM

Proficiency Certificate Level

Ophthalmic Science

(Three Year's Programme – Yearly System)



Council for Technical and Vocational Training
Curriculum Development Division
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Introduction

Government of Nepal has called for the provision of basic health care for all citizens by establishing a network of services in rural and urban population of the country. The Council for Technical Education and Vocational Training (CTEVT) has been contributing towards the development of different level of health personnel in the country. In this context, CTEVT has planned to produce **Ophthalmic Assistant** (Allied Ophthalmic Personnel) with a view to provide comprehensive (preventive and promotive, curative and rehabilitative) eye health services to the community.

In the past, this cadre of human resource were used to certify through CTEVT/Skill test department and considered as a vocational training. This kind of certification though was catering the immediate need of eye care programme in the country, the trained ophthalmic assistant has limited horizon to grow and limited career ladder to upgrade themselves. This has contributed for the increasing demand of academic training which will allow them to grow further after completion of this certificate level course. In this context, the CTEVT started certificate level programme leading to degree '**Proficiency Certificate Level in Ophthalmic Science**' to the candidates who successfully complete the requirements as prescribed by the CTEVT.

The trained Ophthalmic Assistant is a professional Ophthalmic Health Worker, who has been given three full years training in Ophthalmology and related health sciences. The aim of this three years training is to produce compassionate mid level ophthalmic human resource that can help and play important role in eye care delivery system within the hospital and in the community.

The graduates would be eligible for registration with the Nepal Health Professional Council in the category as mentioned in the Act of the Council. The registered graduates would be then eligible for the job at different level health institutions to the position as prescribed by the Public Service Commission or the concerned authority.

Curriculum Title

Proficiency Certificate Level in Ophthalmic Science

Aim

The program aims to educate and train the quality middle level ophthalmic health personnel equipped with sound knowledge and skills of Ophthalmology along with general medicine.

Program Objectives

After the completion of this program, the graduates will be enabled to:

- Acquire sound knowledge and perfect skills of Ophthalmology and general medicine.
- Demonstrate competency in identifying and resolving community health problems by applying Ophthalmic and modern procedure and medicines taking in consideration of nature of the diseases and condition of the patients.

- Demonstrate basic knowledge and clinical skills necessary to diagnose and initiate management of common ocular disorder.
- Exhibit leadership skills and professional characteristics and attitudes required as the role of ophthalmic health personnel or primary eye/health care manager.
- Demonstrate the necessary knowledge and skills to work in a variety of eye/health care settings.
- Promote Ophthalmology system of medicine with modern knowledge and skills.

Group Size

The group size will be maximum of 40 (forty) students in a batch.

Entry Criteria

- SLC Pass or SLC/SEE with minimum GPA 2.0 and C grade in Compulsory Mathematics, English & Science.
- TSLC in Ophthalmology, with minimum 67%.
- Should pass entrance examination as administered by CTEVT.

Duration

The total duration of this curricular program is three years. The program is based on yearly system. Moreover, one academic year consists of maximum of 39 academic weeks and one academic week consists of maximum 42 hours excluding evaluation period.

Medium of Instruction

The medium of instruction will be in English and/or Nepali.

Pattern of Attendance

Minimum of 90% attendance in each subject is required to appear in the respective final examination.

Teacher and Student Ratio

The ratio between teachers and students must be:

- Overall ratio of teacher and student must be 1:10 (at the institution level).
- 1:40 for theory and tutorial classes
- 1:10 for practical classes
- 1:5 for hospital duty
- Minimum of 75% of the teachers must be fulltime.

Qualification of Teachers and Instructors

- The program coordinator must be a master degree holder in related field or M. Sc. in Ophthalmology degree holder with minimum of 3 years experience in teaching activities or services after completion of bachelor degree.
- The teacher must be a bachelor degree holder in related field.
- The demonstrator must have an intermediate level degree in related field with minimum of 2 years experience in teaching activities.

- The foundational subject related teacher should be master degree holder in the related area.

Instructional Media and Materials

The following instructional media and materials are suggested for the effective instruction and demonstration.

- *Printed Media Materials* (assignment sheets, case studies, handouts, information sheets, individual training packets, procedure sheets, performance checklists, and textbooks).
- *Non-projected Media Materials* (display, models, flip chart, poster, writing board).
- *Projected Media Materials* (opaque projections, overhead transparencies, slides).
- *Audio-Visual Materials* (audiotapes, films, slide-tape programmes, videodiscs, videotapes).
- *Computer-Based Instructional Materials* (computer-based training, interactive video).

Teaching Learning Methodologies

The methods of teachings for this curricular programme will be a combination of different approaches (not limited to as mentioned here) such as illustrated lecture, tutorial, group discussion, demonstration, simulation, guided practice, practical experiences, fieldwork, report writing, term paper presentation, community campaign, case analysis, role-playing, heuristic, project work and other independent learning.

Theory: Lecture, discussion, seminar, interaction, assignment, group work.

Practical: Demonstration, observation, guided practice, self-practice, project work, clinical practice.

Mode of Education

There will be inductive and deductive mode of education.

Examination and Marking Scheme

a. Internal assessment

- There will be a transparent/fair evaluation system for each subject both in theory and practical exposure.
- Each subject will have internal assessment at regular intervals and students will get the feedback about it.
- Weightage of theory and practical marks are mentioned in course structure.
- Continuous assessment format will be developed and applied by the evaluators for evaluating student's performance in the subjects related to the practical experience.

b. Final examination

- Weightage of theory and practical marks are mentioned in structure.
- Students must pass in all subjects both in theory and practical for certification. If a student becomes unable to succeed in any subject s/he will appear in the re-examination administered by CTEVT.
- Students will be allowed to appear in the final examination only after completing the internal assessment requirements.

c. Requirement for final practical examination

- Professional of relevant subject instructor must evaluate final practical examinations.
- One evaluator in one setting can evaluate not more than 20 students.
- Practical examination should be administered in actual situation on relevant subject with the provision of at least one internal evaluator from the concerned or affiliating institute led by external evaluator nominated by CTEVT.
- Provision of re-examination will be as per CTEVT policy.

d. Final practicum evaluation will be based on:

- Institutional practicum attendance - 10%
- Logbook/Practicum book maintenance - 10%
- Spot performance (assigned task/practicum performance/identification/arrangement preparation/measurement) - 40%
- Viva voce :
 - Internal examiner - 20%
 - External examiner - 20%

Note: The evaluation and marking schemes for the subjects clinical and comprehensive field practice/study are mentioned separately in the respective sections of the curriculum.

e. Pass marks

- The students must secure minimum 40% marks in theory and 50% in practical. Moreover, the students must secure minimum pass marks in the internal assessment of each subject to appear final examination.

Provision of Back Paper

There will be the provision of back paper but a student must pass all the subjects of all year within six years from the enrollment date; however there should be provision of chance exam for final year students as per CTEVT rules.

Disciplinary and Ethical Requirements

- Intoxication, insubordination or rudeness to peers will result in immediate suspension followed by the review of the disciplinary review committee of the institute.
- Dishonesty in academic or practical activities will result in immediate suspension followed by administrative review, with possible expulsion.
- Illicit drug use, bearing arms in institute, threats or assaults to peers, faculty or staff will result in immediate suspension, followed by administrative review with possible expulsion.

Grading System

The following grading system will be adopted:

- Distinction: 80% and above
- First division: 65% to below 80%
- Second division: 50 % to below 65%
- Pass division: Pass marks to Below 50%

Certification and Degree Awards

- Students who have passed all the components of all subjects of all 3 years are considered to have successfully completed the course.
- Students who have successfully completed the course will be awarded with a degree of "**Proficiency Certificate Level in Ophthalmic Science (Ophthalmology)**".

Career Opportunity

The graduates will be eligible for the position equivalent to Non-gazette 1st class/Level 5 (technical) as Health Worker of eye/ health institutions as prescribed by the Public Service Commission of Nepal and other related agencies. The graduate will be eligible for registration with Nepal Health Professional Council in the category as mentioned in the Act of the Council.

Course Structure of Certificate in Ophthalmic Science

First Year

S N	Subjects	Mode			Distribution of Marks						Total Marks
					Theory			Practical			
		T	P	Total Weekly Hours	Internal	Final	Exam Hour	Internal	Final	Exam Hour	
1	English	3	0	3	20	80	3	-	-	-	100
2	Nepali	3	0	3	20	80	3	-	-	-	100
3	Social Studies	2	0	2	10	40	1.5	-	-	-	50
4	Anatomy & Physiology	4	1	5	20	60	3	10	10	3	100
5	Physics	4	2	6	20	60	3	10	10	3	100
6	Chemistry	4	2	6	20	60	3	10	10	3	100
7	Zoology	3	2	5	20	60	3	10	10	3	100
8	Botany	3	2	5	20	60	3	10	10	3	100
9	Mathematics & Statistics	4	1	5	20	60	3	10	10	3	100
	Total	30	10	40	170	560		60	60		850

Second year

S. No.	Subjects	Mode		Total Weekly Hours	Distribution of Marks						Total marks
		T	P		Theory			Practical			
					Internal	Final	Exam Hours	Internal	Final	Exam Hours	
1	Ocular Anatomy and Physiology	4	1	5	20	80	3	10	15	3	125
2	Ocular Pharmacology and Pathology	3	2	5	15	60	3	20	30	3	125
3	Systemic Diseases and Eye	4	0	4	20	80	3	0	0		100
4	Ocular Disorders- I	4	3	7	20	80	3	30	45	3	175
5	Optics, refraction and Binocular Vision	4	3	7	20	80	3	30	45	3	175
6	Investigative Ophthalmology	2	1	3	10	40	1.5	10	15	3	75
7	Ocular Surgery	4	1	5	20	80	3	10	15	3	125
8	Community Ophthalmology- I	3	1	4	15	60	3	10	15	3	100
Total		28	12	40	140	560		120	180		1000

Third year

S. No.	Subjects	Mode		Total Weekly Hours	Distribution of Marks						Total marks
		T	P		Theory			Practical			
					Internal	Final	Exam Hours	Internal	Final	Exam Hours	
1	Health Care Management	2	1	3	10	40	1.5	10	15	3	75
2	Ocular Disorder- II	3		3	15	60	3	0	0		75
3	Community Ophthalmology- II	3	2	5	15	60	3	20	30	3	125
4	Low Vision and Optical Dispensing	2	1	3	10	40	1.5	10	15	3	75
5	Clinical Practice- I (Hospital Based)*		10	10				125	125		250
6	Clinical Practice- II (Hospital Based)*		10	10				125	125		250
7	Clinical Practice- III (Community Based)*		8	8				100	100		200
Total		10	32	42	50	200		390	410		1050

First Year

(Please see separate curriculum for General Health Science First Year all)

Second Year

- 1. Ocular Anatomy and Physiology**
- 2. Ocular Pharmacology and Pathology**
- 3. Systemic Diseases and Eye**
- 4. Ocular Disorders-I**
- 5. Optics, Refraction and Binocular Vision**
- 6. Investigative Ophthalmology**
- 7. Ocular Surgery**
- 8. Community Ophthalmology-I**

Ocular Anatomy and Physiology

Total: 195 hrs

Theory: 156 hrs

Practical: 39 hrs

Course Description

The course aims to make the students well versed with the basic knowledge of the anatomy and physiology of the eye. At completion of the course, the students should understand and also be able to explain about a normal eye. They should be able to identify the different structures within the eye and be able to explain their functions. They should be able to identify normal from abnormal ocular structures and find out the diseases leading to those abnormalities.

Course Objectives

At the end of the course, the students will be able to:

1. Describe the of embryology of the eye, anatomy of eye lids and adnexa, conjunctiva, cornea, sclera, uveal tract, lens, vitreous humor and retina
2. Understand the physiology of cornea, aqueous humor, metabolism of cornea, lens and vitreous, and be able to describe it

Reference text books

1. 'Anatomy and physiology of the eye' by A K Khurana- JP enterprises current edition

Reference book

1. 'Parson's diseases of the eye Ramanjit Sihota and Radhika Tandon- Elsevier '22nd edition
2. 'Clinical ophthalmology' by Bradbowling 8th edition

COURSE CONTENT

Unit 1: Anatomy	Theory: 105 hrs
Sub-unit 1.1: Ocular embryology	Theory: 10 hrs
Objectives:	Content:
<ol style="list-style-type: none">1. Understand basic embryology of eye in accordance with human embryo.2. Describe about three germinal layers in relation to eye.3. Describe development of different parts of eye in detail.4. Identify anomalies of development of different parts of eyes.	<ol style="list-style-type: none">1. Human embryo and three germinal layers2. Development of retina and optic nerve3. Development of lens4. Development of sclera and cornea5. Development of uveal tract6. Development of vitreous7. Development of angle structure
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Sub-unit 1.2: Anatomy of eye ball, its content and visual pathways	Theory: 60 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe various planes and surfaces and anatomical terms of eye. 2. State the anatomy of following ocular structures along with their blood and nerve supply. <ul style="list-style-type: none"> • Conjunctiva • Cornea • Sclera • Iris • Ciliary body • Choroid • Lens • Vitreous • Retina • Optic nerve • Optic chiasm • Visual cortex 	<ol style="list-style-type: none"> 1. Ocular planes, surface and terminologies. 2. Anatomy of conjunctiva: parts, layers, blood supply, nerve supply 3. Anatomy of cornea: parts, layers, blood supply, nerve supply 4. Anatomy of sclera: parts, layers, blood supply, nerve supply 5. Anatomy of iris: parts, layers, dilator pupillae and sphincter pupillae, blood supply, nerve supply 6. Anatomy of ciliary body: parts, layers, ciliary muscles, blood supply, nerve supply 7. Anatomy of choroid: parts, layers, blood supply, nerve supply 8. Anatomy of lens: parts, layers, blood supply, nerve supply 9. Anatomy of vitreous: parts, layers, blood supply, nerve supply 10. Anatomy of retina: parts, layers, blood supply, nerve supply 11. Anatomy of optic nerve: parts, blood supply, nerve supply 12. Anatomy of optic chiasma and visual cortex: parts, layers, blood supply, nerve supply
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Sub-unit 1.3: Ocular adnexa	Theory: 35 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Explain the anatomy of the orbit and its walls 2. Describe the anatomy of extra ocular muscles 3. Describe the anatomy of intraocular muscles 4. Enumerate the cranial nerves related to eye and describe their functions 5. Describe the anatomy of eyelid and its 	<ol style="list-style-type: none"> 1. Gross anatomy of orbit: walls, margin, bones forming the walls, contents 2. Anatomy of Superior and Inferior orbital fissure: boundaries and contents 3. Origin, insertion, blood and nerve supply of extra ocular viz <ol style="list-style-type: none"> a. Orbicularis oculi b. Levator palpebrae superioris c. Superior rectus

function 6. Describe the anatomy of lacrimal drainage system	<ul style="list-style-type: none"> d. Inferior rectus e. Lateral rectus f. Medial rectus g. Superior oblique h. Inferior oblique <ul style="list-style-type: none"> 4. Origin, insertion, blood and nerve supply of intra ocular muscles <ul style="list-style-type: none"> a. Ciliary muscle b. Sphincter pupillae c. Dilator pupillae 5. Function of 2nd, 3rd, 4th, 5th 6th and 7th cranial nerve and its relation to eye 6. Eyelids: layers, parts, margin, glands, blood supply and nerve supply and function 7. Lacrimal system: main and accessory lacrimal glands, excretory apparatus: puncta, canaliculi, lacrimal sac, nasolacrimal duct
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 2: Ocular Physiology	Theory: 51 hrs
Sub-unit 2.1: Dynamics of aqueous humor	Theory: 16 hrs
Objectives:	Content:
<ul style="list-style-type: none"> 1. Describe the formation of aqueous humor 2. Describe the functions of aqueous humor 3. Describe the angle structures 4. Describe the drainage of aqueous humor 	<ul style="list-style-type: none"> 1. Aqueous humor formation: site, mechanism of formation (secretion, diffusion, ultrafiltration) 2. Function of aqueous humor 3. Angle structures: Schwalbe's line, trabecular meshwork, scleral spur, ciliary body band, root of iris 4. Drainage of aqueous humor: trabecular mesh work path way, uveoscleral pathway
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 2: Ocular physiology	
Sub-unit 2.2: Cornea and lens metabolism	Theory: 10 hrs
Objectives:	Content:
1. Explain the metabolism of cornea and lens	<ul style="list-style-type: none"> 1. Cornea metabolism: active site (endothelium and epithelium), carbohydrate metabolism (source: aqueous and tear film) aerobic and anaerobic pathway in brief. 2. Lens metabolism: active site (anterior epithelium), carbohydrate metabolism (source: aqueous humor), anaerobic and aerobic pathway in brief. 3. Sorbitol pathway in brief.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice

Sub-unit 2.3: Tear dynamics	Theory: 10 hrs	
Objectives:	Content:	
1. Describe the formation of tears 2. Describe the function of tears 3. Describe the drainage of tears	1. Mechanism of tear production 2. Layers of tear film, their production and their function 3. Mechanism of tear drainage (Rosengren Doane theory)	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Sub-unit 2.4: visual pathway	Theory: 15 hrs	Lab/practical: hrs
Objectives:	Content:	
1. Describe the visual pathway 2. Describe the pupillary pathway 3. Describe the near reflex	1. Visual pathway: course in brief 2. Pupillary pathway: direct light reflex, consensual light reflex, RAPD and its course in brief 3. Near reflex triad: miosis, accommodation and convergence (to list only)	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Ocular anatomy practical		
		Lab/practical: 30 hrs
Objectives:	Content:	
1. Identify different parts of eye and describe anatomy of each part in brief.	1. Lids (3) 2. Conjunctiva (3) 3. Cornea (3) 4. Sclera (3) 5. Aqueous humor (3) 6. Vitreous humor (3) 7. Iris and uveal tract (3) 8. Retina (3) 9. Optic nerve (3) 10. Extra ocular muscles (3)	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: wet lab, pigs eye/ goat eye, mannequin, model of eye, photographs, classroom instruction, supervised clinical practice	
Ocular physiology practical (Light reflex)		
		Lab/practical : 9 hrs
Objectives:	Content:	
1. Explain the pupillary pathway 2. To demonstrate the procedure of direct, consensual light reflex and RAPD	1. Pupillary pathway: Direct light reflex RAPD Consensual light reflex	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, photograph, supervised clinical practice	

Ocular Pharmacology and Pathology

Total: 195 hrs

Theory: 117 hrs

Practical: 78 hrs

Course Description

The course provides basic concepts on pharmacology and pathology with special reference to eye. The students will acquire knowledge on the selection of appropriate drugs for specific diseases/conditions, their actions, indications, contraindications, and side effects and basic introduction to ocular pathology that deals about medical microbiology and hematology with special reference to eye.

Course objectives

At the end of the course, the students will be able to:

- 1) Understand the specific action and the use of drugs on different body systems with special reference to eye.
- 2) Know the mechanism of action, indication, contraindication, adverse reactions of following drugs:
 - a) NSAIDS
 - b) Different ocular drugs
 - c) Antimicrobial drugs
 - d) Gastro intestinal drugs
 - e) Respiratory system drugs
 - f) Cardiovascular System drugs
 - g) Nutritional supplements
- 3) Describe different kinds of microorganisms related to human diseases.
- 4) Describe the formation and functions of different components of blood.
- 5) Perform basic microbiological, biochemical and hematological tests in the laboratory setting.

Recommended Texts

1. Dr. Bharatmani Pokhrel. A Handbook of Clinical Microbiology, Gorakhnath Desktop Printing and Support, Kathmandu.
2. Gupta, Rajesh K. and Yadav Binod K., A Text book of Medical Laboratory Technology (Volume I and II), Samikshaya Books, Bagbazar, Kathmandu.
3. Chatterjee, K.D. 1981. Parasitology. Chatterjee Medical Publishers, Calcutta, India.

Reference Books

1. Paniker, C.K. 1993. Textbook of Medical Parasitology, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, India.
2. Tripathi, K.D. 2010. Essentials of Medical Pharmacology, Jaypee Brothers Medical Publishers (P) Ltd., Newdelhi, India.
3. Pathak T.B. 2011. Medical Pharmacology and Pharmacy, Bidhyarthi Prakashan (P) Ltd., Kamalpokhari, Ktm.
4. Nepalese National Formulary (NNF) Department of drug Administration 2017
5. Martindale, The extra pharmacopoeia, 29th Edition

COURSE CONTENT

Part 1: Ocular Pharmacology	Hrs. theory: 59
Unit 1: Introduction to Pharmacology	Hrs. theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define pharmacological terminology. 2. Identify half-life, plasma concentration of drug, bioavailability, shelf life, expiry date. 3. Describe preventive measures to minimize Adverse Drug Reaction. 4. Provide emergency management of Adverse Drug Reactions. 5. Identify the importance of pharmacodynamics study. 6. Explain the importance of pharmacokinetics study. 7. Explain the routes of administration of drugs with reference to Ophthalmology. 	<ol style="list-style-type: none"> 1. Definition of pharmacology, pharmacodynamics, pharmacokinetics, pharmacy, drug, medicine, indication and contraindication. 2. Adverse effects <ol style="list-style-type: none"> a. Definitions, classifications with examples. Define Side Effect b. Adverse Drug Reaction (ADR), classification and important manifestations c. Preventive measures of Adverse Drug Reaction. 3. Definition of pharmacokinetics and its importance <ul style="list-style-type: none"> • absorption: definition, process, factors affecting absorption • bio-availability: definition. • distribution and penetration: placental barrier and blood brain barrier • metabolism: definition, • elimination of drug: list routes of drug elimination 4. Definition of pharmacodynamics and its importance: Definition and brief introduction to receptor theory of drug. 5. Describe different routes of routes of administration of drugs (Local, Systemic and Ocular).
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts
Unit 2: Antimicrobial Agents	Hrs. Theory: 15
Objectives:	Content:
<ol style="list-style-type: none"> 1. Prescribe the drug therapy for bacterial diseases 2. Select ideal anthelmintic and antiprotozoal drug and use it appropriately. 3. Identify conditions requiring use of systemic antifungal 4. Describe how to use acyclovir rationally. 5. Select appropriate antiseptic and preservatives and use of these agents rationally. 	<ol style="list-style-type: none"> 1. Definition of: antibacterial, anthelmintic, antifungal, antiviral, antiseptic and preservatives. 2. Definition and classification of antibiotics on the basis of mechanism of action and spectrum of activity. 3. β-lactum antibiotic: Mechanism of action, indication contraindication, side effects, precautions and dose of:

	<ul style="list-style-type: none"> • Penicillin: Ampicillin, Amoxycillin, Cloxacillin. • Cephalosporin: Cefozolin, Cefixime, Cefadroxil <ol style="list-style-type: none"> 4. Macrolides: Mechanism of action, indication contraindication, side effects, precautions and dose of: Erythromycin, Azithromycin. 5. Tetracycline's: Mechanism of action, indication contraindication, side effects, precautions and dose of: Tetracycline and Doxycycline. 6. Chloramphenicol: Mechanism of action, indication contraindication, side effects, precautions and dose of Chloramphenicol. 7. Aminoglycosides: Mechanism of action, indication contraindication, side effects, precautions and dose of: Streptomycin, Gentamicin, Natamycin, Neomycin. 8. Floroquinolones: Mechanism of action, indication contraindication, side effects, precautions and dose of: Ciprofloxacin, Norfloxacin, Ofloxacin 9. Antihelminthic drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of Albendazole and Mebendazole. 10. Antiprotozoal drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of Metronidazole, Diloxanidefuroate. 11. Antifungal drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of 12. Miconazole, Ketoconazole, Fluconazole and Clotrimazole. 13. Antiviral drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of acyclovir. 14. Brief introduction of antiseptics and preservatives: Boric acid, zinc sulphate, benzalkonium chloride.
<p>Evaluation methods: written exam, viva</p>	<p>Teaching / Learning Activities & Resources: classroom instruction, handouts</p>

Unit 3: Drugs used in Gastrointestinal Systems	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Prescribe drug therapy for peptic ulcer rationally. 2. List ideal antispasmodic drugs and use it rationally. 3. Choose and use laxative according to guideline and can explain contraindication. 4. List antimotility drugs and their disadvantages on therapy of diarrhea. 5. Select the ideal drugs for constipation. 	<ol style="list-style-type: none"> 1. Drugs used in peptic ulcer disease: Mechanism of action, indication contraindication, side effects, precautions and dose of Ranitidine, Pantoprazole, Aluminium hydroxide and Sucralfate. 2. Antispasmodics: Mechanism of action, indication contraindication, side effects, precautions and dose of Hyoscine, Dicyclomine. 3. Antimotility drugs: Definition, brief description and therapeutic use of Loperamide and Oral Rehydration Solution. 4. Laxatives and Purgatives: Definition and therapeutic uses of Bisacodyl, Lactulose.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 4: Drugs used in common respiratory systems	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Select ideal bronchodilator and describe its therapeutic use on asthma, and Chronic Obstructive Pulmonary Disease (COPD). 2. Identify dose & dosage form, Adverse Effect, Contraindication, Indication of bronchodilators and manage ADR. 	<p>Drugs used in Asthma and COPD: Mechanism of action, indication contraindication, side effects, precautions and dose of Salbutamol, Salmeterol, Theophylline, Tiotropium Bromide, Montelukast.</p>
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 5: NSAIDS and Steroidal Anti-inflammatory drugs	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Select and prescribe analgesics and antipyretics rationally. 2. Select and prescribe anti-inflammatory drugs rationally. 3. Select ideal steroidal drugs appropriately. 4. Differentiate between steroidal and non-steroidal anti-inflammatory drugs. 	<ol style="list-style-type: none"> 1. Definition of pain, pyrexia and inflammation 2. Analgesic, antipyretic and anti-inflammatory drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of Ibuprofen, Flurbiprofen, Indomethacin, Diclofenac, Napafenac, Ketorolac and Paracetamol. 3. Steroidal Drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of Hydrocortisone, Prednisolone, Batamethasone and Dexamethasone

Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 6: Drugs used in cardiovascular systems	Hrs. theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> 1. Identify the therapeutic uses of anti-hypertensive drugs. 2. Identify the rational use of anti-hyperlipidemic drugs. 	<ol style="list-style-type: none"> 1. Antihypertensive Drugs: Classification, Mechanism of action, indication contraindication, side effects, precautions and dose of Amlodipine, Atenolol, Losartan, Furosemide and Enalapril. 2. Anti-hyperlipidemic Drugs: Mechanism of action, indication contraindication, side effects, precautions and dose of Atorvastatin and Fenofibrate.
Unit 7: Nutritional Supplements	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Identify conditions for rational use of different vitamins. 2. Select the vitamins rationally. 	Vitamins: Classification, Sources and Roles of commonly used water soluble and fat soluble vitamins: vitamin A, vitamin B-complex, vitamin C, vitamin E, vitamin B ₁₂ .
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 8: Hormones and related drugs	Hrs. theory: 1
Objectives:	Content:
Identify the rational use of drugs in Diabetes Mellitus.	Mechanism of action, indication contraindication, side effects, precautions and dose of: Insulin, Metformin, Glimepiride, Gliclazide.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts
Unit 9: Drugs used in Central Nervous System	Hrs. theory 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define and explain different types of CNS acting drugs. 2. Explain clinical guidelines for use of sedatives and hypnotics. 	<ol style="list-style-type: none"> 1. Definition and examples of: sedative, hypnotic, anxiolytic, anticonvulsant, anti-parkinsonian, opioid analgesic, drug abuse, drug addiction and habituation. 2. Mechanism of action, indication contraindication, side effects, precautions and dose of: Morphine, Diazepam, Levodopa.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 10: Anti-histamines and Anti-allergics	Hrs. theory: 2
Objectives:	Content:
1. Identify and select the appropriate anti-histamine and anti-allergic drugs.	Antihistamines and antiallergics: Mechanism of action, indication, contraindication, side

	effects, precautions and dose of Cetrizine, Fexofenadine, Chlorpheniramine, Sodium chromoglycate.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 11: Anesthetics	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Identify local and general anesthetic drugs. 2. Describe the rational use of different local anesthetic drugs. 3. Describe the rational use of different general anesthetic drugs. 	<ol style="list-style-type: none"> 1. Local anesthetics: Classification, Mechanism of action, indications, contraindications, side effects, precautions and dose of Lignocaine, Tetracaine and Procaine. 2. General anesthetics: Classification, Mechanism of action, indications, contraindications, side effects, precautions and dose of Nitrous oxide, Halothane, Ketamine and Propofol.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 12: Mydriatics and Cycloplegics	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Select and Prescribe ideal mydriatics and cycloplegics. 2. Explain therapeutic uses of mydriatics and cycloplegics. 	<ol style="list-style-type: none"> 1. Definition of Mydriatics and Cycloplegics. 2. Mechanism of action, indications, contraindication, side effects, precautions and dose of Atropine, Homatropine, Scopolomone, Cyclopentolate, Tropicamide, Phenylephrine and Epinephrine.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 13: Miotics and Anti-glaucoma drugs	Hrs. Theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. List miotic drugs and select appropriate miotic drugs. 2. Describe the therapeutic uses of miotic drugs. 3. Classify antiglaucoma drugs. 4. Select the ideal antiglaucoma drugs rationally. 	<ol style="list-style-type: none"> 1. Miotics: Mechanism of action, indications, contraindications, side effects, precautions and dose of Pilocarpine, Physostigmine, Neostigmine, Ergotamine, Dibenamine. 2. Anti-glaucoma drugs: Classification, Mechanism of action, indications, contraindications, side effects, precautions and dose of Timolol, Betaxolol, Levobunolol, Carbachol, Brimonidine, Apraclonidine, Acetazolamide, Dorzolamide, Latanoprost, Travoprost and Mannitol.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.

Unit 14: Lubricating Agents:	Hrs. Theory: 2
Objectives	Content:
1. Enlist commonly used Lubricating Agents. 2. Describe uses of Lubricating Agents.	Lubricating Agents: Brief introduction and therapeutic uses of Carboxy Methyl Cellulose, Ploy Vinyl Povidone and Poly Vinyl Alcohol.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 15: Prescription	Hrs. Theory: 1
Objectives:	Content:
1. Describe the parts of Prescription 2. List of commonly used abbreviations in Prescription.	Prescription: Definition, Parts of Prescription and abbreviations used in Prescription.
Part II: Ocular Pathology	Hrs. Theory: 58
Unit 1: General Introduction to Microbiology	Hrs. Theory: 3
Objectives:	Content:
1. Describe the historical development of Microbiology. 2. Explain the scope and branches of Microbiology.	1. Definition of Microbiology, Medical Microbiology. 2. Historical development of Microbiology. 3. Scope of Microbiology. 4. Branch of Microbiology with special reference to Ophthalmic Science.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 2: Ocular Bacteriology	Hrs. Theory: 15
Objectives:	Content:
1. Describe the morphology of bacteria: True bacteria (cocci, bacilli), Filamentous bacteria, Spirochaetes, Mycoplasma, Chlamydiae and Rickettsiae. 2. List the normal flora of different body parts. 3. Describe bacterial growth and growth curve of bacteria. 4. Describe factors influencing bacterial growth. 5. Explain bacterial culture and types of culture media. 6. Explain the theory and procedure of Gram staining. 7. Describe methods for antibiotic susceptibility testing. <ul style="list-style-type: none"> • Tube dilution method. • Paper diffusion method. 8. Describe epidemiology, mode of infection, pathogenicity, laboratory diagnosis of <i>Chlamydia trachomatis</i> , <i>Staphylococcus</i>	1. Morphological classification, Structure of bacteria 2. Anatomical location of bacteria. 3. Bacterial growth characteristics, generation time and factors influencing bacterial growth. 4. Culture media and cultivation techniques of bacteria. 5. Theory and procedure of Gram staining. 6. Antibiotic susceptibility testing. 7. Epidemiology, mode of infection, pathogenesis, laboratory diagnosis of <i>Chlamydia trachomatis</i> , <i>Staphylococcus aureus</i> , <i>Neisseriagonorrhoeae</i> .

<i>aureus</i> and <i>Neisseriagonorrhoeae</i>	
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts, Laboratory practice.
Unit 3: Ocular Virology	Hrs. Theory: 8
Objectives:	Content:
<ol style="list-style-type: none"> Describe the morphology of virus: Icosahedral, Helical and Complex Symmetry. Classify virus on the basis of: symmetry of nucleocapsid, genome, host specificity. Describe the replication of virus in general. List the different methods (chick embryonated egg, cell lines) of virus cultivation. Describe epidemiology, mode of infection, pathogenicity, laboratory diagnosis of Adenovirus and Herpes-Simplex virus 	<ol style="list-style-type: none"> Morphology of virus Classification of virus Replication of virus in general Cultivation of virus Epidemiology, mode of infection, pathogenesis, laboratory diagnosis of Adenovirus and Herpes-Simplex virus.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts.
Unit 4: Ocular Mycology	Hrs. Theory 8
Objectives:	Content:
<ol style="list-style-type: none"> Describe the morphology of fungi: Yeast, mold and dimorphic fungi. Classify fungi on the basis of clinical importance: Superficial, cutaneous, sub-cutaneous, systemic and opportunistic fungi. Describe about reproduction in fungi: Sexual and asexual methods in brief. Explain the procedure of KOH mounting in staining of fungal cells. List the media used for culture of fungi. Describe epidemiology, mode of infection, pathogenicity, laboratory diagnosis of: <i>Candidasp</i>, <i>Fusariumsp</i>, <i>Aspergillus spp</i>. 	<ol style="list-style-type: none"> Morphology of fungi Classification of fungi on the basis of clinical importance. Reproduction of fungi in brief. Staining and culture of fungi. Epidemiology, mode of infection, pathogenesis, laboratory diagnosis of <i>Candidasp</i>, <i>Fusariumsp</i>, <i>Aspergillus spp</i>.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources: classroom instruction, handouts, Laboratory practice.
Unit 5: Ocular Parasitology	Hrs. Theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> Describe the morphology of parasites (protozoa and helminthes). Classification of parasites. Describe epidemiology, mode of infection, pathogenicity, laboratory diagnosis of: <i>Onchocerca volvulus</i>, <i>Loa loa</i> and <i>Acanthamoeba spp</i>. 	<ol style="list-style-type: none"> Morphology of parasites: Protozoa and helminthes. Classification of parasites Epidemiology, mode of infection, pathogenesis, laboratory diagnosis of <i>Onchocerca volvulus</i>, <i>Loa loa</i> and <i>Acanthamoebaspp</i>.
Evaluation methods: written exam, viva	Teaching / Learning Activities & Resources:

	classroom instruction, handouts and Laboratory practice.
Unit 6: Hematology	Hrs. Theory: 8
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the general composition of blood. 2. Describe types of blood cells with their function. 3. Describe the stages of formation of blood cell. 4. Describe total leucocyte count (TLC), Differential leucocyte count (DLC) with their normal values. 5. Describe test method (Wintrobe method) and normal value of erythrocyte sedimentation rate (ESR) of blood. 	<ol style="list-style-type: none"> 1. Blood composition. 2. Types of blood cells. 3. Structure of blood cells. 4. Functions of blood cells. 5. TLC, DLC with normal values. 6. ESR test method with normal values.
Evaluation methods: Written examination, viva, observation of performance in lab	Teaching / Learning Activities: Classroom instruction, textbook/reference book self-study, journals, laboratory practice
Unit 7: Sterilization and Disinfection	Hrs. Theory 10
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define sterilization and disinfection. 2. Differentiate between sterilization and disinfection. 3. Describe physical methods of sterilization. <ul style="list-style-type: none"> • Moist heat (Steam under pressure and fractional sterilization) • Dry heat (Hot air sterilization, flaming, incineration) • Radiation (x- rays, gamma rays, UV rays and infrared rays.) • Filtration. 4. Describe chemical methods of sterilization (Phenols and phenolic compounds, Alcohols, Halogens, Heavy metals and their compounds, Formaldehyde, Glutaraldehyde, Ethylene oxide, β-propiolactone, Hydrogen peroxide) 5. Identify the usual materials to be sterilized by each of the above methods of sterilization. 	<ol style="list-style-type: none"> 1. Physical methods of sterilization. 2. Chemical methods of sterilization. 3. Applications of physical and chemical method of sterilization.

Practical	
Course: Ocular Pharmacology (Part I)	Hrs. Lab: 39
Objectives:	Content:
1. Measure Vitals	Measurement of temperature/ Pulse rate/ Respiration rate/ Blood pressure of human volunteers
2. Prepare drug profile of commonly used ocular drugs.	Preparation of drug profile of commonly used ocular drugs.
3. Case studies	Case studies on drugs used in ocular setting
4. Handling and restraining of mice	Learning the technique to handle and restrain mice
5. Know effects of cholinergic and anticholinergic drugs on rabbit cornea	Carry out the study on the effect of cholinergic and anticholinergic drugs on rabbit cornea
6. Know dose adjustments in different diseases	Dose adjustment in hepatic disease, urinary disease, elderly patient, pregnancy and lactation
Course: Ocular Pathology (Part II)	Hrs. lab: 39
Objectives:	Content:
<ol style="list-style-type: none"> 1. Identify handling techniques of different laboratory goods. 2. Perform Gram stain and Giemsa stain. 3. Perform eye swab examination for ova, cyst and parasites. 4. Perform microscopic examination of eye specimen. 5. Prepare bacterial and fungal media in the laboratory. 6. Demonstrate TLC, DLC and ESR of blood. 7. Demonstrate use autoclave, hot air oven etc. 	<ol style="list-style-type: none"> 1. Handling techniques of different laboratory goods. 2. Different – microbiological investigations. 3. Microbiological media preparation. 4. TLC and DLC of blood. 5. Determine erythrocyte sedimentation rate (ESR). 6. Aseptic techniques in the laboratory.
Evaluation methods:	Teaching / Learning Activities:
Written examination, viva, observation of performance in lab	Classroom instruction, textbook/reference book self-study, journals, laboratory practice, Textbooks, etc.

Systemic Diseases and Eye

Total: 156 hrs

Theory: 156 hrs

Practical: 0 hrs

Course Description

This course will provide the students with concepts and ideas of diseases in general medicine related to eye. The eye being involved with the various organ system and their diseases has to be dealt in a proper understanding of the pathogenesis and the diseases presentation in relation to the eye. Diseases like Diabetes Mellitus, Hypertension and Thyroid disorders are emerging as major Non communicable disorders hence understanding these diseases and its impact in the eye are of utmost importance to the health professional's knowledge and skills.

Course objectives

At the end of the course, the students will be able to:

1. Explain the systemic diseases related to eye in relation to hypertension and its impact on eye
2. Explain about diabetes mellitus and its clinical impact on eye
3. Explain the thyroid disease and its impact on eye
4. Explain about the different connective tissue diseases and its impact on eye
5. Take the systemic history and finding the clinical systemic manifestation.
6. Make a great help to the students in making eye diagnosis of systemic diseases and for providing the available treatment, counseling and the needful referral to the higher centres.

Recommended Texts

1. 'Anatomy and physiology of the eye' by A K Khurana- JP enterprises current edition

Reference books

1. 'Parson's diseases of the eye Ramanjit Sihota and Radhika Tandon- Elsevier' 22nd edition
2. 'Clinical ophthalmology' by Brad bowling 8th edition

COURSE CONTENT

Unit 1: Diabetes Mellitus	Theory: 42 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Determine the prevalence, risk factors, clinical features, systemic complications and outline of management of diabetes 2. Assess the prevalence, pathogenesis, risk factors, classification and management of diabetic retinopathy 3. Diagnose diabetic retinopathy using various techniques. 4. Counsel the patients with diabetic retinopathy. 5. Develop competency on counseling of vision threatening retinopathy and referral of patients 6. Diagnose diabetic retinopathy using direct ophthalmoscopy diabetic retinopathy using indirect ophthalmoscopy 7. Diagnose diabetic retinopathy using fundus photography 	<ol style="list-style-type: none"> 1. Definition of diabetes 2. Prevalence of diabetes 3. Risk factors and clinical features of diabetes 4. Complications and management of diabetes 5. Prevalence of diabetic retinopathy 6. Pathogenesis and risk factors of diabetic retinopathy 7. Clinical features of diabetic retinopathy 8. Classification of diabetic retinopathy 9. Management of diabetic retinopathy
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 2: Hypertension	Theory: 31 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Determine the prevalence, risk factors, clinical features, systemic complications and outline of management of Hypertension. 2. Assess the prevalence, pathogenesis, risk factors, classification and management of hypertensive retinopathy. 3. Diagnose hypertensive retinopathy using various techniques. 4. Counsel the patients with hypertensive retinopathy. 5. Develop competency on counseling of vision threatening retinopathy and referral of patients. 6. Diagnose hypertensive retinopathy using direct ophthalmoscopy diabetic retinopathy using indirect ophthalmoscopy 7. Diagnose hypertensive retinopathy using fundus photography 	<ol style="list-style-type: none"> 1. Definition of hypertension 2. Prevalence of hypertension 3. Risk factors and clinical features of hypertension 4. Complications and management of hypertension 5. Prevalence of hypertension retinopathy 6. Pathogenesis and risk factors of hypertension retinopathy 7. Clinical features of hypertensive retinopathy 8. Classification of hypertensive retinopathy 9. Management of hypertensive retinopathy

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 3 : Thyroid eye disease	Theory: 31 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Discuss about Thyroid gland and its functions. 2. Discuss Thyroid eye diseases. 3. Explain about ocular manifestations of Thyroid eye diseases (Thyrotoxicosis). 4. Discuss about different investigations required for the diagnosis of Thyroid eye diseases. 5. Discuss different treatment modalities of Thyroid eye diseases. 6. Discuss issues related to complications of Thyroid eye diseases and its management. 	<ol style="list-style-type: none"> 1. Introduction – Thyroid gland and its functions 2. Clinical features of Thyroid eye diseases (Thyrotoxicosis). 3. Investigations of Thyroid eye diseases. 4. Treatment modalities of Thyroid eye diseases. 5. Complications of Thyroid eye diseases. 6. Management of complications of Thyroid eye diseases.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 4: Vitamin A deficiency	Theory: 21 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Develop competency on clinical features, diagnosis, classification and initial management and counseling and referral 2. Discuss issues related to prevalence of Vitamin A deficiency 3. Discuss key issues on pathogenesis and risk factors of Vitamin A deficiency 4. Discuss the issues on clinical features of Vitamin A deficiency 5. Discuss on classification of Vitamin A deficiency 6. Discuss the issues in management of malnutrition and needful referral. 7. Discuss key issues on pathogenesis and risk factors of malnutrition 8. Discuss the issues on clinical features of malnutrition 9. Discuss ocular issues in relation to malnutrition. 10. Discuss the issues in management of multiple vitamin deficiency and malnutrition and needful referral. 	<ol style="list-style-type: none"> 1. Introduction : vitamin A deficiency 2. WHO classification of Vitamin A deficiency 3. Pathogenesis in general and in relation to eye in Vitamin A deficiency 4. Clinical features- symptoms and signs of Vitamin A deficiency 5. Initial management of vitamin A deficiency 6. Complications of vitamin A deficiency. 7. Prevalence of Vitamin A deficiency 8. Pathogenesis and risk factors of Vitamin A deficiency 9. Clinical features of Vitamin A deficiency 10. Classification of Vitamin A deficiency 11. Management of malnutrition and needful referral 12. Pathogenesis and risk factors of malnutrition 13. Clinical features of malnutrition 14. Malnutrition : in brief 15. Management of multiple vitamin deficiency and malnutrition and needful referral.

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 5: Other systemic diseases	Theory: 31 hrs
Objectives:	Content:
1. Develop clinical knowledge on the ocular manifestations of the following systemic diseases.	<ol style="list-style-type: none"> 1. Introduction 2. Pathogenesis in general and in relation to eye 3. Clinical features- symptoms and signs 4. Initial management 5. Complications of the following listed disease 6. Tuberculosis 7. Leprosy 8. Syphilis 9. Gonorrhoea 10. Rubella 11. Toxoplasmosis 12. HIV/AIDS
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Ocular Disorders- I

Total: 273 hrs

Theory: 156 hrs

Practical: 117 hrs

Course Description

This course provides to diagnose comprehend regarding the signs, symptoms and manage the eye disorders. It also gives skill and knowledge to perform a proper history taking and do the clinical examination, establish a diagnosis in diseases and provide the available treatment. Referral system and the competency for the referral will be obtained by the students by the end of the course. The course aims to provide the students the knowledge on common ocular disorders including the common congenital diseases, communicable conditions of the eye and also focuses on the upgrading of the knowledge on the emerging and important non communicable disease as, diabetes, hypertension, and thyroid related diseases. It also aims to give the preventive knowledge on the diseases like retinopathy of prematurity.

Course objectives

At the end of the course, the students will be able to:

1. Diagnose and explain the ocular disorders and manage them and refer whenever necessary.
2. Perform the required history taking, clinical examination with the available resources and make the diagnosis.
3. Give the available treatment.
4. Focus on teaching the students the right time of the referral to the higher centers.

Recommended Texts

1. 'Anatomy and physiology of the eye' by A K Khurana- JP enterprises current edition

Reference book

1. 'Parson's diseases of the eye Ramanjit Sihota and Radhika Tandon- Elsevier'22ndedition
2. 'Clinical ophthalmology' by Brad bowling8th edition

COURSE CONTENT

Unit 1: Disease of lid and adenexa	Theory: 21 hrs	Lab/practical : 22 hrs
Sub-unit 1.1: Congenital Anomalies and lid diseases		
Objectives:	Content:	
<ol style="list-style-type: none"> 1. List the common ocular congenital anomalies. 2. Enumerate Describe the treatment modalities of the causes of eyelid edema. 3. List the causes of eyelid inflammation 4. Describe the symptoms and signs of blepharitis (anterior and posterior). 5. Clinical findings of chalazion and internal hordeolum 6. Describe the clinical features of stye. 7. Discuss the management and treatment of chalazion, internal hordeolum and stye. 8. Clinical examination of eye lids and adenexa and description about the abnormalities in position of eye lashes and lid margin. 9. List the causes of entropion upper and lower lid 10. List the causes of ectropion upper and lower lid 11. Mention the clinical features of entropion and ectropion. 12. Mention the various modalities of surgical treatment of entropion and ectropion 13. Describe the BLTR of entropion surgery. 14. List the causes of symblepharon and ankyloblepharon. 15. List the causes of lagophthalmos and describe the clinical features. 16. List the causes of ptosis 17. Mention the types and grading of ptosis 18. Describe the symptoms and signs of ptosis. 19. List the treatment of Ptosis and referral. 20. Enumerate the different types of Eyelid tumours. 21. List the classification of eyelid tumors 22. Benign (with examples) 23. Malignant (with examples) 24. Discuss the clinical features of different types of benign and malignant tumours of eye lid. 	<ol style="list-style-type: none"> 1. Congenital Anamolies : <ol style="list-style-type: none"> I. List the congenital anomalies. II. Enumerate the clinical features of following congenital anomalies: 2. State the clinical features and treatment of edema of eyelids 3. Inflammatory disorders : <ul style="list-style-type: none"> • Different types of Blepharitis • Clinical features of Chalazion • Treatment modalities of Chalazion. • Clinical features of Internal hordeolum • Treatment modalities of internal hordeolum • Clinical features of Stye • Treatment modalities of Stye. • Clinical features and treatment of Molluscum Contagiosum 4. Clinical features and treatment of anomalies in the position of lashes and lid margins <ul style="list-style-type: none"> • Trichiasis • Entropion • Ectropion • Symblepharon • Ankyloblepharon • Lagophthalmous • Blepharospasm • Blepharophimosis • Ptosis 5. Tumours : <ul style="list-style-type: none"> • Classification of eyelid tumours description : clinical features, clinical examination and the treatment modalities: squamous cell carcinoma, basal cell carcinoma, sebaceous gland carcinoma malignant melanoma • Referral to higher centers. 	

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 1: Disease of Lid and Adenexa	
Sub-unit 1.2: Orbit	
Objectives: <ol style="list-style-type: none"> 1. Define Preseptal cellulitis and Mention the causes of Preseptal cellulitis. 2. Describe the symptoms and signs of Preseptal cellulitis. 3. Describe the treatment modalities of Pre septal cellulitis. 4. Define Orbital cellulitis. 5. Mention the causes of orbital cellulitis. 6. Describe the symptoms and signs of orbital cellulitis. 7. Describe the treatment modalities of Orbital cellulitis.. 8. Introduction, clinical features and initial management of Cavernous sinus thrombosis. 9. Immediate referral of Orbital cellulitis and Cavernous sinus thrombosis to higher center. 10. Definition and classification of Proptosis. 11. Describe the causes of Proptosis. 12. Describe the symptoms and signs of Proptosis. 13. Describe the management of Proptosis. 14. Indications of referral for cases of Proptosis. 15. List the different types of Congenital anomalies of Orbit. 16. Enlist the causes of congenital anomalies of orbit. 17. Describe the symptoms and signs of congenital anomalies of orbit. 18. Immediate referral of congenital anomalies of Orbit to higher center. 	Content: <ol style="list-style-type: none"> 1. Definition of Pre -septal cellulitis. 2. Causes of Pre-septal cellulitis. 3. Symptoms and signs of Pre-septal cellulitis. 4. Treatment modalities of Pre- septal cellulitis. 5. Definition of Orbital cellulitis. 6. Causes of orbital cellulitis. 7. Symptoms and signs of orbital cellulitis. 8. Treatment modalities of Orbital cellulitis.. 9. Introduction, clinical features and initial management of Cavernous sinus thrombosis. 10. Referral of Orbital cellulitis and Cavernous sinus thrombosis to higher center 11. Definition and classification of Proptosis. 12. Causes of Proptosis. 13. Symptoms and signs of Proptosis. 14. Management of Proptosis. 15. Referral for cases of Proptosis 16. Different types of Congenital anomalies of Orbit (Anophthalmos, Microphthalmos, Enophthalmos) 17. Causes of congenital anomalies of orbit. 18. Symptoms and signs of congenital anomalies of orbit.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Unit 1: Lid and Adenexa	
Sub-unit 1.3 : Lacrimal Drainage System	
Objectives:	Content:
<ol style="list-style-type: none"> 1. List the causes of Watering and dry eyes. 2. Describe the clinical evaluation for the diagnosis of watering and dry eyes. 3. Define Dacryocystitis. 4. Describe the causes of Dacryocystitis. 5. Describe the clinical features of Dacryocystitis. 6. Describe the treatment modalities of dacryocystitis. 7. Define Dacryoadenitis. 8. Describe the causes of Dacryoadenitis. 9. Describe the clinical features of Dacryoadenitis. 10. Describe the treatment modalities of Dacryoadenitis. 	<ol style="list-style-type: none"> 1. Diseases of Lacrimal apparatus 2. Causes of Watering and dry eyes. 3. Clinical evaluation for the diagnosis of watering and dry eyes. 4. Definition of Dacryocystitis. 5. Causes of Dacryocystitis. 6. Clinical features of Dacryocystitis. 7. Treatment modalities of dacryocystitis. 8. Definition of Dacryoadenitis. 9. Causes of Dacryoadenitis. 10. Clinical features of Dacryoadenitis. 11. Treatment modalities of Dacryoadenitis. 12. Definition, Causes, clinical features and treatment of Canaliculitis.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit : 2 Disease of Conjunctiva	Theory: 18 hrs Lab/practical : 10 hrs
Objectives:	Content:
<p>Conjunctivitis.</p> <ol style="list-style-type: none"> 1. List the different classification of conjunctivitis with the examples. 2. Describe the symptoms of conjunctivitis: <ol style="list-style-type: none"> a. Viral b. Bacterial c. Allergic d. Protozoal 3. Describe the signs on the basis of torch light and slit lamp examination. 4. Enumerate the treatment modalities of different types of conjunctivitis. 5. Indication and details of the conjunctival swab collection method. 6. Attain the competency to decide the resolving conjunctivitis and deteriorating conjunctivitis with reference to the referral to higher centres. 7. Perform the clinical examination to make the diagnosis of allergic conjunctivitis 8. Outline the treatment measures of allergic conjunctivitis. 9. List out the degenerative conditions of conjunctiva. 	<ol style="list-style-type: none"> 1. Inflammations of conjunctiva <ul style="list-style-type: none"> • Definition of conjunctivitis • Clinical features of different types of conjunctivitis • Clinical features of the membranous and pseudomembranous conjunctivitis. • Treatment of conjunctivitis. • Complications of conjunctivitis. • Different types of procedures to be performed to make the diagnosis of conjunctivitis. • Prevention of communication of acute conjunctivitis. • Definition of Ophthalmia neonatorum • Symptoms and signs of Ophthalmia neonatorum. • Management of Ophthalmia neonatorum along with the investigations • Define allergic conjunctivitis • Symptoms and signs of allergic

<ol style="list-style-type: none"> 10. Mention the risk factors and treatment modalities of Pinguecula. 11. Definition of Pterygium. 12. Describe different types of Pterygium. 13. Outline the grading of pterygium. 14. Describe the pathogenesis of pterygium 15. List the different treatment modalities 16. Describe the pterygium surgery with conjunctival autograft. 17. List out the complications of pterygium 	<p>conjunctivitis</p> <ul style="list-style-type: none"> • Risk factors to allergic conjunctivitis • Treatment of allergic conjunctivitis • Preventive measures for the disease. <ol style="list-style-type: none"> 2. Degenerative conditions <ul style="list-style-type: none"> • Risk factors and treatment modalities of Pinguecula. • Definition of Pterygium. • Different types of Pterygium. • Risk factors of pterygium. • Grading of pterygium. • Pathogenesis of pterygium • Different treatment modalities • Complications of pterygium • Clinical manifestation and treatment of concretion • Clinical characteristics of different Symptomatic conditions :e.g. 3. Cysts : list the different types of conjunctival cyst 4. Enlist different Tumours of conjunctiva 5 Classification of tumours of conjunctiva 	
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>	
<p>Unit 3: Cornea</p>	<p>Theory: 18 hrs</p>	<p>Lab/practical : 12 hrs</p>
<p>Objectives:</p>	<p>Content:</p>	
<ol style="list-style-type: none"> 1. List the common corneal congenital anomalies. 2. Describe the clinical features of different types of congenital anomalies of cornea. 3. Outline the differential diagnosis of different congenital anomalies of cornea. 4. Mention the different causative organism of corneal ulcer. 5. Classify the different corneal ulcer. 6. List out the risk factors of corneal ulcer 7. Describe the clinical features of different corneal ulcer. 8. Explain the indications and describe the corneal scrapping method. 9. Discuss the management and treatment of different types of corneal ulcer. 10. Mention the complications of corneal ulcer. 	<ol style="list-style-type: none"> 1. Congenital anomalies <ul style="list-style-type: none"> • Definition of Megalocornea and the clinical characteristics • Definition of Microcornea and the clinical characteristics • Definition of Cornea Plana and the clinical characteristics • Definition of Congenital cloudy cornea and the clinical characteristics • Differential diagnosis of different congenital anomalies of cornea. 2. Inflammations of the cornea <ul style="list-style-type: none"> • Different causative organism of bacterial corneal ulcer. • Different causative organism of viral 	

<p>11. Give the definition of trachoma. 12. Mention the risk factors for trachoma 13. Enlist the WHO classification of trachoma. 14. Treatment of trachoma according to the different grades of trachoma.</p>	<p>corneal ulcer.</p> <ul style="list-style-type: none"> • Different causative organism of fungal corneal ulcer. • Different causative organism of protozoal corneal ulcer. 	
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>	
<p>Unit 4: Lens and cataract</p>	<p>Theory: 23 hrs</p>	<p>Lab/practical : 20 hrs</p>
<p>Objectives:</p>	<p>Content:</p>	
<ol style="list-style-type: none"> 1. Define Cataract. 2. List the different classification of Cataract. 3. Describe the pathogenesis of Cataract. 4. Mention the various risk factors for cataract development. 5. Describe the symptoms of different types of Cataract. 6. Describe the signs of different types of Cataract. 7. Give the grading of nuclear sclerosis. 8. Classify the different congenital cataract 9. Mention different risk factors of congenital cataract. 10. Mention the different types of Cataract surgery. 11. List the indications of Cataract surgery. 12. Mention the different complications of Cataract. 13. Mention the different complications of Cataract surgery. 14. Develop the competency to decide the urgency of cataract surgery and its timely referral. 15. Enlist the different anomalies of lens position. 16. Clinical features of anomalies of lens position 17. Mention the different causes of anomalies of lens position. 18. List the different congenital anomalies of lens. 	<ol style="list-style-type: none"> 1. Congenital cataract: <ol style="list-style-type: none"> a. Clinical features of Congenital cataract b. Clinical features of Developmental cataract c. Different treatment modalities d. Vision rehabilitation in children after surgery. 2. Acquired cataract: <ol style="list-style-type: none"> a. Risk factors for cataract development. b. Symptoms of different types of Cataract. c. Signs of different types of Cataract. d. Grading of nuclear sclerosis e. Brief description different types of Cataract surgery. 3. Indications of Cataract surgery. 4. Different complications of Cataract. 5. Different complications of Cataract surgery. 6. Referral of patients with cataract 7. Different anomalies of lens position. 8. Clinical features of anomalies of lens position 9. Different causes of anomalies of lens position. 10. Clinical features of congenital anomalies of lens: 11. Lens coloboma <ol style="list-style-type: none"> a. Lenticonus b. Lentiglobus c. Microspherophakia 	

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Unit 5 : Iris and uveal tissue	Theory: 18 hrs	Lab/practical : 10 hrs
Objectives: <ol style="list-style-type: none"> 1. List the various congenital anomalies of iris. 2. Describe the clinical features of: <ol style="list-style-type: none"> a. Polycoria b. Aniridia c. Persistent pupillary membrane d. Coloboma e. Corectopia f. Heterochromia of iris 3. Define Uveitis. 4. List the classification of uveitis. 5. Describe the clinical features of anterior intermediate and posterior uveitis. 6. Outline the management of uveitis with investigative tools. 7. Enlist the treatment 8. counselling components and the referral system. 9. Define endophthalmitis 10. List the classification of endophthalmitis. 11. Outline the causes of endophthalmitis 12. Describe the clinical features of endophthalmitis. 13. Describe panophthalmitis. 14. Define panophthalmitis. 15. List the causes of panophthalmitis. 16. Outline the clinical features of panophthalmitis. 17. Mention the differentiating factors between endophthalmitis and panophthalmitis. 	Content: <ol style="list-style-type: none"> 1. Congenital anomalies <ol style="list-style-type: none"> a. Polycoria b. Aniridia c. Persistent pupillary membrane d. Coloboma e. Corectopia f. Heterochromia of iris 2. Definition of uveitis. Define 3. Classification of uveitis in relation to anatomy. 4. Clinical features of anterior, intermediate and posterior uveitis. 5. Management of uveitis with investigative tools. 6. Treatment of uveitis in brief. 7. Counselling components and the referral system. 8. Definition of endophthalmitis. 9. Etiopathogenesis of endophthalmitis. 10. Classification of endophthalmitis. 11. Organism causing endophthalmitis in order of frequency. 12. Investigations for endophthalmitis. 13. Treatment and management with the counseling of patients. 14. Differences between endophthalmitis and panophthalmitis . 15. Causes of panophthalmitis 16. Clinical symptoms and signs of panophthalmitis. 17. Treatment and management of panophthalmitis. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Unit 6: Glaucoma	Theory: 18 hrs	Lab/practical : 13 hrs
<p>Objectives:</p> <ol style="list-style-type: none"> 1. Define glaucoma. 2. Classify different types of glaucoma 3. Mention the clinical features of congenital glaucoma 4. Mention the differential diagnosis of congenital glaucoma. 5. List out the different surgery for congenital glaucoma. 6. List the symptoms and signs of angle closure glaucoma. 7. List the symptoms and signs of acute angle closure glaucoma and its management. 8. Describe the clinical features of open angle glaucoma 9. Mention the signs of open angle glaucoma. 10. Outline the treatment modalities of open angle glaucoma 11. List the different names of various glaucoma surgery. 	<p>Content:</p> <ol style="list-style-type: none"> 1. Glaucoma: Congenital , open angle glaucoma and angle closure glaucoma <ul style="list-style-type: none"> ➤ Definition of glaucoma. ➤ Clinical features of glaucoma ➤ Enlist different Classification of glaucoma. ➤ Definition of ocular hypertention and its management. ➤ Etiology and pathogenesis of open angle glaucoma in brief. ➤ Pathogenesis of angle closure glaucoma in brief. ➤ Different investigations for the diagnosis of glaucoma. ➤ Clinical features of open angle glaucoma and the angle closure glaucoma. ➤ Treatment modalities of open angle and angle closure glaucoma 	
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice</p>	

Unit 7: Retina and Optic nerve	Theory: 30 hrs	Lab/practical : 15 hrs
Sub-unit 7.1: Diseases of Retina		
Objectives:	Content:	
<ol style="list-style-type: none"> 1. List the congenital anomalies of retina. 2. Describe the clinical features of retinitis pigmentosa. 3. Mention in brief about retinitis pigmentosa. 4. Counseling of patients with retinitis pigmentosa, 5. Describe the clinical features of retinochoroidal coloboma. 6. Define central retinal venous occlusion and branch retinal vein occlusion. 7. Mention the symptoms of reinal vein occlusion: CRVO and BRVO. 8. Mention the investigations in retinal vein occlusion. 9. Enlist the treatment of retinal vein occlusion. 10. Classify diabetic retinopathy. 11. Describe the clinical features of different grades of Diabetic retinopathy. 12. Mention the different investigations used in the diagnosis and management of diabetic retinopathy. 13. Mention the different modalities of treatment for diabetic retinopathy. 14. Mention the criteria for the referral of diabetic patients to higher center. 15. Classify hypertensive retinopathy. 16. Describe the different symptoms and sighs of hypertensive retinopathy. 17. Mention the treatment for hypertensive retinopathy. 18. Define Retinopathy of prematurity. 19. Mention the risk factors of ROP. 20. Mention the treatment of ROP. 	<ol style="list-style-type: none"> 1. Diseases of Retina <ul style="list-style-type: none"> ➤ Different congenital anomalies of retina. ➤ Symptoms and signs of retinitis pigmentosa. ➤ Hereditary pattern of retinitis pigmentosa :list out ➤ Counseling in retinitis pigmentosa, ➤ Clinical features of retino-choroidal coloboma. ➤ Central retinal venous occlusion and branch retinal vein occlusion in brief. ➤ Symptoms of retinal vein occlusion: CRVO and BRVO. ➤ Investigations in retinal vein occlusion. ➤ Treatment of retinal vein occlusion. ➤ Classification of diabetic retinopathy. <ul style="list-style-type: none"> ○ Clinical features of different grades of Diabetic retinopathy. ○ Different investigations used in the diagnosis and management of diabetic retinopathy. ➤ Different modalities of treatment for diabetic retinopathy.. ➤ Definition of hypertensive retinopathy. ➤ Symptoms and signs of hypertensive retinopathy. ➤ Treatment for hypertensive retinopathy. ➤ Definition of Retinopathy of prematurity. ➤ Risk factors of ROP. ➤ Treatment of ROP. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Unit 7: Retina and Optic nerve	
Sub unit 7.2: Retinal Detachment	
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define retinal detachment. 2. Classify different types of retinal detachment. 3. Describe the clinical features of retinal detachment. 4. Mention the treatment modalities of retinal detachment. 5. Describe Macular hole and its characteristics. 6. Outline the treatment modalities of Macular hole. 7. Define Central serous chorioretinopathy. 8. Describe the clinical features of CSCR. 9. Mention the investigations of CSR. 10. Mention the treatment of CSR. 11. Mention the causes of Macular edema. 12. List the investigations and treatment of Macular edema. 13. Define Age related macular degeneration. 14. Risk factors of ARMD. 15. Describe the clinical features of ARMD. 16. List the investigations and management of ARMD. 17. Classify tumors of retina. 18. Describe the clinical features of retinoblastoma. 19. Describe the different modalities of treatment of retinoblastoma. 	<ol style="list-style-type: none"> 1. Clinical features, investigation and management of Retinal detachment 2. Definition of Macular hole 3. Symptoms and signs of Macular Hole. 4. Treatment modalities of Macular hole. 5. Clinical features of CSCR. 6. Investigations for CSCR. 7. Treatment and Management of CSCR. 8. Causes of Macular edema. 9. Investigations and treatment of Macular edema. 10. Definition of Age related macular degeneration. 11. Risk factors of ARMD. 12. Types of ARMD. 13. Clinical features of ARMD. 14. Investigations and management of ARMD. 15. Tumors of retina 16. Retinoblastoma: Introduction, Clinical presentation and diagnosis.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice
Unit 7: Retina and Optic nerve	
Sub-unit 7.3 : Disc edema and optic neuritis	
Objectives:	Content:
<ol style="list-style-type: none"> 1. Mention the causes of disc edema. 2. Mention the causes of papilledema. 3. List the causes of Optic neuritis. 4. Mention the different Investigations and treatment of disc edema and optic neuritis. 	<ol style="list-style-type: none"> 1. Causes of disc edema. 2. Causes of papilledema. 3. Causes of Optic neuritis. 4. Different Investigations and treatment of disc edema and optic neuritis.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice

Unit 8 : Strabismus and Amblyopia	Theory: 10 hrs	Lab/practical : 15 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Define strabismus. 2. Define binocular single vision 3. Mention the prerequisites of BSV 4. Describe about the anomalies of BSV 5. Elaborate the abnormal retinal correspondence. 6. Define suppression 7. Define Amblyopia 8. Enlist the Types of amblyopia 9. Describe the causes of amblyopia 10. Mention the treatment modalities of amblyopia. 	<ol style="list-style-type: none"> 1. Strabismus brief description 2. Classification of strabismus. 3. Definition of the binocular single vision 4. Binocular single vision grading. 5. Prerequisites of BSV in brief. 6. Anomalies of BSV 7. Abnormal retinal correspondence definition and brief description with example. 8. Definition of suppression 9. Suppression : Explanation with examples 10. Definition of Amblyopia 11. Different types of amblyopia: classification 12. Causes of amblyopia 13. Treatment modalities of amblyopia. 14. Patching and penalization therapy in brief 15. Patching and penalization therapy in amblyopia. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Optics, Refraction and Binocular Vision

Total: 273 hrs

Theory: 156 hrs

Practical: 117 hrs

Course Description

The course aims to make the students to be familiar with the basic knowledge of the optics, refraction and binocular vision. The course will firstly focus on understanding of the light and its clinical implications. This knowledge will help to know the different optical condition of the eye. Once they are competent on the optics of the eye they will be educated on the techniques to measure refractive error and refine it.

The other part of the course provides knowledge on eye teaming and focusing to perceive the world in synchronized manner, how the eyes will behave once this harmony is disturbed. This knowledge will help them to identify different binocular vision abnormalities. This allows them to assist in the clinical management of the cases with binocular disorders.

Course Objectives

At the end of the course, the students will be able to:

1. Understand the light and its properties
2. Explain the behavior of light in different media & abnormalities in the eyes related to the optics of the eyes
3. Know different refractive condition of the eye and assess them.
4. Understand accommodation and asses them
5. Understand different monocular and binocular abnormalities of the eye and work-up cases with binocular disorders

Recommended Texts

1. Practice of refraction, Duke Elder's, 10th edition
2. Theory of practice of optics and refraction, A K Khurana, 4th edition
3. Strabismus simplified, Pradip Sharma, 2nd edition
4. Theory Practice Squint and Orthoptics, A K Khurana

Reference Books

1. Clinical Optics, Troy E. Fanin, Theodore P. Grosvenor
2. Borish clinical refraction, 2nd edition
3. Clinical Visual optics, Ronald B Rabbetts , 4th edition
4. Binocular Vision and Ocular motility, Gunter K. Von Noorden, 6th edition

COURSE CONTENT

Unit 1 : Optics	Theory: 44 hrs	Lab/practical : 38 hrs
Sub-unit 1.1 : Light, its nature and interaction with reflective & refractive medium	Theory: 20 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand theories and nature of light 2. Perform various experiments of light in optical bench. 	<ol style="list-style-type: none"> 1. Introduction 2. Wave and particle theory of light 3. Interference, Diffraction and Scattering 4. Sign conventions for ray diagram and image formation 5. Reflection in Plane and curved surface 6. Refraction through plane and curved surface 7. Reflection and refraction in eye 8. Vergence through plus and minus lens 9. Vergence change with distance 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Unit 1: Optics		
Sub-unit 1.2 : Cardinal points	Theory: 12 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand about cardinal points in lens system 2. Explain thick and thin lens and various lens design 3. Understand the schematic eye 4. Calculate the power of the lens 	<ol style="list-style-type: none"> 1. Introduction 2. Importance in lens system 3. Introduction to thin and thick lens. 4. Calculation of focal length using formulae in thin and thick lens. 5. Introduction to gullstrand eye model, simple eye and reduced eye with the defined parameters 6. Lens designs options in minus and plus lens 7. Meniscus lens and its advantages 8. Lenticular lens and myodiscs 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Unit 1: Optics		
Sub-unit 1.3 : Manufacturing of ophthalmic lenses	Theory: 12 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand about the lens Manufacturing 2. Describe the properties of ophthalmic lens 3. Describe lens aberrations 4. Observe the lens manufacturing process 	<ol style="list-style-type: none"> 1. Manufacturing of glass lens 2. Manufacturing of thermosetting and thermoplastic lens 3. Properties of ophthalmic lens 4. Usefulness of ophthalmic lenses in glass prescription 5. Monochromatic aberration in lens 6. Chromatic aberration in lens 	

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Unit 2: Refraction	Theory: 58 hrs	Lab/practical : 29 hrs
Sub-unit 2.1 : Visual acuity and Refractive errors	Theory: 16 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand Visual acuity and Vision charts 2. Describe different types of Refractive error and presbyopia 3. Perform Visual Acuity assessment 	<ol style="list-style-type: none"> 1. Introduction to visual acuity and concept behind VA 2. Introduction to distance (Snellens and Log MAR) and near vision chart 3. Notations for visual acuity recording 4. Methods of VA recording in different age group Pinhole, principle and Uses 5. Myopia and its classification based on etiology 6. Hyperopia and its classification based on etiology 7. Astigmatism and types of astigmatism 8. Accommodation and its physiology 9. Introduction to presbyopia and its classification 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Unit 2 : Refraction		
Sub-unit 2.2 : Subjective and Objective refraction	Theory: 20 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand about procedure of subjective refraction and objective refraction 2. Perform subjective and objective refraction 	<ol style="list-style-type: none"> 1. Parts of retinoscope, optical principle, reflex characteristics and procedure. 2. Radical retinoscopy 3. Introduction to objective refraction and its importance 4. Keratometry, principle and procedure 5. Autorefractometer, introduction and procedure 6. Introduction to subjective refraction and its importance 7. Procedures for Spherical power determination(JND, Schiener disc, Optometer) 8. Procedures for cylindrical power and axis determination (staenopic slit, clock dial, astigmatic fan) 9. Procedures for spherical power refinement (Fogging, Duochrome) 10. Procedures for cylindrical power and axis refinement (Jackson cross cylinder) 	

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 2 : Refraction		
Sub-unit 2.3 : Specifying lens power, Prescription Writing and power verification	Theory: 10 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand the component of Ophthalmic lens power 2. Calculate the power of different types of lens 3. Write the prescription for ophthalmic lenses 	<ol style="list-style-type: none"> 1. Introduction to Spherical lens and power 2. Introduction to Cylindrical lens and power 3. Sphero-cylindrical lens and power 4. Prescription writing and transposition 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 2: Refraction		
Sub-unit 2.4: Contact lens, contact lens solution and complication of contact lens	Theory: 12 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Understand about contact lens, their fitting care and referral 2. Observe the fitting of contact lenses and care. 	<ol style="list-style-type: none"> 1. Introduction to contact lens types, indication and contraindication 2. Introduction to contact lens solution and its components 3. Wearing modality in contact lens 4. Common complications in Soft and Hard contact lens wear 5. Referral criteria for contact lens fitting 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 3: Binocular Vision		
Sub-unit 3.1: Extraocular muscles	Theory: 54 hrs	Lab/practical : 50 hrs
Objectives:	Theory: 10 hrs	
Content:	Content:	
<ol style="list-style-type: none"> 1. Understand the Function of EOM 2. Perform various eye movement tests 	<ol style="list-style-type: none"> 1. Origin, insertion and nerve innervation 2. Various laws for muscle action 3. Primary, Secondary and Tertiary action of EOM 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Unit 3: Binocular Vision	
Sub-unit 3.2: Accommodation and convergence	Theory: 12 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Understand ocular accommodation and its anomalies 2. Perform various tests for accommodative functions 	<ol style="list-style-type: none"> 1. Accommodation and its effect in ocular alignment 2. Anomalies of accommodation 3. Convergence and its effect in ocular alignment 4. Convergence-divergence problems 5. Basic tools and procedure for measuring convergence and accommodation problems
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 3: Binocular Vision	
Sub-unit 3.3 : Ocular misalignment of eyes	Theory: 10 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Understand different ocular misalignments of the eye 2. Perform various test to reveal ocular misalignment of the eye and record them 	<ol style="list-style-type: none"> 1. Content: Heterophoria: Esophoria, exophoria, vertical phoria and their measurement 2. Heterotropia: Exotropia, Esotropia, vertical tropia and their measurement 3. Concomitant vs Incomitant strabismus 4. Paralytic and restrictive strabismus
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 3 : Binocular Vision	
Sub-unit 3.4 : Motor and sensory adaptation to strabismus	Theory: 5 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Understand various adaptation of strabismus 2. Perform various tests of adaptation 	<ol style="list-style-type: none"> 1. Introduction to Diplopia, Abnormal Retinal correspondence and Suppression 2. Abnormal head position in ocular misalignment 3. Introduction to diplopia and Hess charting 4. Nystagmus, Cause and its types
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Unit 3 : Binocular Vision	
Sub-unit 3.5 : Basic tests in Orthoptics setting	Theory: 9 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Under orthoptic evaluation of the eyes 2. Perform orthoptic tests 	<ol style="list-style-type: none"> 1. Hirschberg and krimsky test 2. Cover test, Prism cover test and its types 3. Test for convergence and accommodative problems 4. Test for suppression 5. Tests for stereopsis 6. Test for Prism fusion range, methods and interpretation
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 3 : Binocular Vision	
Sub-unit 3.6 : Amblyopia and its management	Theory: 8 hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Understand about Amblyopia and its management. 2. Evaluation of amblyopic cases and manage them 	<ol style="list-style-type: none"> 1. Introduction 2. Types 3. Cause, 4. Investigation-interpretation and 5. Management
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Investigative Ophthalmology

Total: 117 hrs

Theory: 78 hrs

Practical: 39 hrs

Course Description

This course provides the student with knowledge and skill required to carry out the important investigations in Ophthalmic Practice. Students will acquire knowledge on the need of different investigation procedures for specific eye problems and students will also be able to understand and interpret the findings of the investigations.

Course Objectives

At the end of the course, the student will be able to:

1. Measure visual acuity (near and distance)
2. Perform colour vision test
3. Perform schirmer test and syringing test
4. Measure IOP
5. Perform Visual field and ultrasonography
6. Perform FFA, fundus and anterior segment photography
7. Perform exophthalmometry, pachymetry, keratometry and gonioscopy
8. Perform Fundus examination with direct and indirect ophthalmoscopy

Recommended texts

1. Comprehensive Ophthalmology; A K Khurana . New age international Publisher, India.
2. Primary Care Optometry, Theodore Grosvenor . Published by Butterworth-Heinemann.

Reference books

1. Ophthalmic Assistant; Harold A Stein.
2. Text book of ophthalmology for para medicals, P.C Karmacharya.
3. Fundus Fluorescen and Indocynine Green Angiogram, Amresh Chopdar.
4. Hand book For Clinical Ophthalmic assistants- Principles and techniques of clinical ophthalmic procedures, Arvind eye care system.

COURSE CONTENT

Course: Investigative Ophthalmology	
Unit 1: Visual Acuity	Hrs. Theory: 6 Hrs. Practical: 5
Objective:	Content :
<ol style="list-style-type: none"> 1. Define visual acuity. 2. Describe different methods of taking visual acuity in adult and children. 3. Describe different methods of taking near visual acuity. 	<ol style="list-style-type: none"> 1. Definition of visual acuity, Principle of Visual acuity. 2. Understand the required Illumination, Alignment, Conversion test distance. 3. Different types of vision charts with its proper distance for adult <ol style="list-style-type: none"> a) Snellen's chart b) Landolt 'C' chart c) Tumbling 'E' chart d) ETDRS e) LogMAR chart 4. Different types of vision acuity methods for kids < 3 Yrs age <ol style="list-style-type: none"> a) OKN Test b) Catford drum Test c) Preferential looking Test d) Sheridan Gardiner Test e) Picture Chart f) Lea Symbols 5. Who definition of Blindness and Low Vision.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting
Course: Investigative Ophthalmology	
Unit 2: Contrast and Colour Vision	Hrs. Theory: 5 Hrs. Practical: 2
Objective:	Content :
<ol style="list-style-type: none"> 1. Describe normal and abnormal colour vision and colour blindness. 2. Describe different methods of evaluating colour vision. 3. Identify different technique for contrast sensitivity testing. 	<ol style="list-style-type: none"> 1. Different colour vision anomalies. <ol style="list-style-type: none"> a. Trichromacy b. Dichromacy c. Monochromacy 2. Associated diseases for colour vision defects 3. Different materials for colour vision assessment and their interpretation. <ol style="list-style-type: none"> a. Ishihara chart b. D -15 Test c. Fransworth-Munsell 100 hue test. 4. Counselling for colour blindness 5. Definition of contrast sensitivity and its measurement 6. Different indication for colour vision and contrast sensitivity testing.

Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 3: Intra Ocular Pressure	Hrs. Theory: 4	Hrs. Practical: 4
Objective:	Content :	
<ol style="list-style-type: none"> Describe normal and abnormal intraocular pressure Discuss intra ocular pressure, normal value and associated diseases for abnormal IOP. Enlist different technique and procedure for measuring IOP. 	Methods of measuring intra ocular pressure <ol style="list-style-type: none"> Digital Schiotz Goldmann Applanation Tonometry Non Contact Tonometry 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 4: Visual Field	Hrs. Theory: 8	Hrs. Practical: 4
Objective:	Content :	
<ol style="list-style-type: none"> Explain different methods of Visual Field Evaluation Identify normal and abnormal parameters of static and kinetic visual field. 	<ol style="list-style-type: none"> Definition of visual field, Peripheral field, Central field and Physiological Blind spot. Different techniques of visual field assessment <ol style="list-style-type: none"> Confrontation test Amsler grid Goldman Perimetry Humphrie visual field test FDT Different Glaucomatous field defects Different types of Neurological field defect. 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 5: USG	Hrs. Theory: 3	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> Identify different indications for USG. Explain different techniques of anterior and posterior segment evaluation by USG. 	<ol style="list-style-type: none"> Definition of Ultrasonogram and its principle. Different methods of anterior and posterior segment evaluation by different probes. Anterior segment evaluation by UBM technique. Evaluation by Stand-off technique. Different changes seen in posterior segment evaluation. USG finding in different mode. Methods of probe orientation in B-scan 	

Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 6: DRY EYE	Hrs. Theory: 4	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> 1. Define dry eye 2. Evaluate dry eye by different methods. 3. Interpret the results of different tests 	<ol style="list-style-type: none"> 1. Different methods for the assessment of tear film <ol style="list-style-type: none"> a. Schirmer's test type I, type II b. TBUT c. Tear meniscus level d. Rose Bengal test 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 7: SYRINGING	Hrs. Theory: 5	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> 1. Explain tear drainage system and different parts involving in tear drainage. 2. Perform the proper technique for syringing 3. Interpret the significance and complication of syringing. 	<ol style="list-style-type: none"> 1. Anatomy of lacrimal passage 2. Equipment necessary for syringing <ol style="list-style-type: none"> a. Normal saline b. Cannula c. Syringe 3. Regurgitation through: Same punctum, upper punctum with clear fluid or with pus 4. Probable complication such a Corneal abrasion, punctum tear, conjunctival laceration, infection due to contamination. 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 8: Blood pressure, Blood sugar level	Hrs. Theory: 4	Hrs. Practical: 3
Objective:	Content :	
<ol style="list-style-type: none"> 1. Define blood pressure, Systolic and Diastolic blood pressure. 2. Explain procedure of measuring blood pressure. 3. Measure blood pressure. 4. Define Hyper/ Hypo Glycaemia. 5. Describe normal and abnormal blood sugar level 6. Identify proper technique to withdraw blood from vein. 	<ol style="list-style-type: none"> 1. Definition of hypertension and hypotension and abnormal heart rate. 2. Normal and abnormal blood pressure at different age group. 3. Different types of Instrument for measuring blood pressure. 4. Knowledge of interpreting blood sugar level in fasting, PP and RBS. 	

Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 9: Exophthalmometer	Hrs. Theory: 3	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> 1. Define Exophthalmometer. 2. List different types of exophthalmometer. 3. Identify proper technique of performing different instrument for measuring proptosis. 	<ol style="list-style-type: none"> 1. Definition and causes of proptosis. <ol style="list-style-type: none"> a. Axial type b. Non axial type 2. Normal Axial range in different race of people. 3. Types of equipment used for measuring exophthalmos. <ol style="list-style-type: none"> A. Hertel B. Luedde C. Naugle 4. Definition and Causes of Enophthalmos. 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 10: Anterior segment photography, fundus photography, OCT	Hrs. Theory: 7	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> 1. List different equipment's for anterior and posterior segment evaluation. 2. Perform Pentacam, slitlamp fundus camera, panfundoscope, 3. Evaluate OCT macula, OCT glaucoma, OCT anterior segment with interpretation of its result. 	<ol style="list-style-type: none"> 1. Different types of OCT and its principle. 2. Orientation about anterior and posterior segment OCT. 3. Disease diagnosis, evaluation and its findings. 	
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting	
Course: Investigative Ophthalmology		
Unit 11: Pachymetry	Hrs. Theory: 4	Hrs. Practical: 2
Objective:	Content :	
<ol style="list-style-type: none"> 1. Explain different corneal parameters and dimensions. 2. Identify corneal thickness value in different age groups 3. Perform pachymetry with different 	<ol style="list-style-type: none"> 1. Pachymetry and its importance in the diagnosis of different corneal diseases? 2. Indication of abnormal pachymetry value in different diseases. 3. Types of pachymetry (contact, Non-contact) 	

techniques 4. List the complications of pachymetry	4. Uses of pachymetry. 5. Role of pachymetry in clinical practice.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting
Course: Investigative Ophthalmology	
Unit 12: Gonioscopy	Hrs. Theory: 4 Hrs. Practical: 2
Objective:	Content :
1. Define anterior chamber angle structures. 2. Explain the principal of Gonioscopy with clinical uses and interpretation of findings.	1. Different structures of anterior chamber angle 2. Different types of Gonioscopy used in clinical basis. 3. Different system of grading of angle of anterior chamber structure by gonioscopy.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting
Course: Investigative Ophthalmology	
Unit 13: Ophthalmoscope, 90D lens, Slitlamp	Hrs. Theory: 7 Hrs. Practical: 3
Objective:	Content :
1. Perform ophthalmoscopy. 2. Perform distance direct ophthalmoscope and interpret the result. 3. Identify different features available in ophthalmoscope. 4. Perform indirect ophthalmoscope. 5. Perform 90d lens for fundus evaluation 6. Identify different parts of slitlamp and its uses in clinical practice.	1. Definition of direct and indirect Ophthalmoscopy and its principle 2. Characteristic of image formation and prerequisites for performing ophthalmoscopy 3. Advantage of the binocular indirect ophthalmoscope. 4. Different types of lenses available for fundus evaluation. 5. Methods of Lens Care. 6. Importance of fundus evaluation 7. Principle of slit lamp evaluation 8. Technique of using slitlamp for disease diagnosis.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting
Course: Investigative Ophthalmology	
Unit 14: FFA	Hrs. Theory: 7 Hrs. Practical: 2
Objective:	Content :
1. Identify conditions required for performing FFA 2. Identify different test required before performing FFA.	1. Introduction and principle of Fundus Fluorescein Angiography with needful drugs and its complications. 2. Describe different stage of FFA with their findings

3. Interpret result of FFA.	3. Necessary blood test for the prevention of complication of dye used.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting
Course: Investigative Ophthalmology	
Unit 15: Keratometry, Biometry	Hrs. Theory: 7 Hrs. Practical: 2
Objective:	Content :
<ol style="list-style-type: none"> 1. Perform keratometry. 2. Identify the normal axial length. 3. Identify 'A' constant relation with different types of IOL. 4. Explain different technique of probe position during Biometry. 	<ol style="list-style-type: none"> 1. Definition of keratometry, its types and its principle. 2. Uses of keratometry for the evaluation of different diseases. 3. Definition of biometry and its principle. 4. Measurement and power calculation using different formula and their importance. 5. Proper probe position and its orientation 5. Contact and emersion technique. 6. Complication and errors while performing biometry.
Evaluation Methods: Written Exam, Viva, Performance Observation in clinical setting	Teaching/ Learning Activities / Resources: Classroom Instruction, Practice in a clinical setting

Ocular Surgery

Total: 195 hrs

Theory: 156 hrs

Practical: 39 hrs

Course Description

This course provides knowledge and skills to the students about different types of ocular surgical technique, investigative, procedure and basic ophthalmic nursing procedure required to perform during, after and or before surgery. Student will also develop knowledge and skills on the ocular surgical procedure to assist the ophthalmologist and on the eligible cases to perform specified surgeries on their own.

Course Objectives

At the end of the course, the students will be able to:

1. Describe the different role of ophthalmic assistant in the hospital and community.
2. State the specific ophthalmic nursing care of the individual receiving ocular surgery.
3. Explain the concept of operation theatre and Preparer patient for ocular surgery.
4. Prepare surgical instrument set for different ophthalmic surgery and Sterilize ophthalmic OT, basic instruments and equipment and consumables required for surgeries.
5. Carryout aseptic procedure and infection control during ocular surgery and assist the ophthalmologist in different types of ocular surgeries
6. Perform different types of ocular minor surgical procedures and investigations independently.
7. State the pre -operative and post -operative care of different types of ophthalmic surgery.
8. Identify the different type of anesthesia for ocular surgery.
9. Explain the role of ophthalmic assistant in administration of drug.

Recommended Texts:

1. A.K. Khurana , Comprehensive Ophthalmology, Sixth Edition
2. Jakable and Sigelman, Advanced Techniques in Ocular surgery, First Edition
3. AK Khurana , Ophthalmic Nursing, First Edition
4. Giri M and Sharma P, Fundamental of Nursing, Medhavi publication,

Reference Book:

2. Waltman and Krupin, Complications in ophthalmic surgery, First edition
3. JAPEE and Sandeep Saxena, Ophthalmic Surgery the Cutting, First Edition
4. Pandey A, Essential of operation theatre Nursing, First Edition

COURSE CONTENT

Unit 1: Introduction to ophthalmic assistant	Theory: 3 hrs	
Objectives:	Content:	
1. Explain about OA and their traits, roles and responsibilities.	Ophthalmic assistant: <ul style="list-style-type: none"> • Definition • Traits • Roles and responsibilities 	
Evaluation methods: written exam, viva	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting	
Unit 2: Ophthalmic Nursing Care	Theory: 10 hrs	Lab/practical : 4 hrs
Objectives:	Content:	
1. Explain about ophthalmic nursing care. 2. Measure Temperature, Pulse, Respiration and Blood pressure.	2.1 Ophthalmic Nursing measures to Assess the patient. <ol style="list-style-type: none"> a. Vital signs <ul style="list-style-type: none"> ▪ Definition ▪ purpose 2.2 Temperature <ol style="list-style-type: none"> a) Regulation b) Factors affecting body temperature. c) Alteration d) Techniques of measurements and recording. e) Types of fever. <ul style="list-style-type: none"> • constant • Intermittent • Relapsing. f) Grading of fever. <ul style="list-style-type: none"> • Hyper pyrexia. • Pyrexia. • Sub normal • Hypothermia. g) Principles and methods of measuring temperature ;oral, axilla, groin 2.3 Pulse <ul style="list-style-type: none"> • Definition. • Types • characteristics • Factors affecting pulse • Sites of checking pulse. 2.4 Respiration <ul style="list-style-type: none"> ▪ Definition ▪ Types ▪ Characteristics of normal respiration. ▪ Factors affecting respiration. 	

	<p>2.5 Blood Pressure.</p> <ul style="list-style-type: none"> • Definition. • types • Systolic and diastolic. • Purpose • Factors affecting • Sites of measuring
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 3: Operation Theatre	Theory: 40 hrs Lab/practical : 10hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Understand the objective of OT and OT management and aseptic technique. 2. Explain role and responsibilities of the scrub and circulating personnel. 3. Perform trolley preparation in different eye surgery. 4. Know the equipment, Instruments, Consumable and non- consumable. 5. Understand OT hazards and risk management. 6. Describe definition, type of ocular anesthesia, equipments, role and responsibilities of anesthetics ophthalmic assistant and management of recovery patient. 7. Perform the pre-operative and post-operative management. 8. Know general route of drug administration and ocular route of drug administration. 9. Perform eye/nose medication and rules for drug administration. 	<p>3.1 Operation Theatre management.</p> <ul style="list-style-type: none"> • Objective • Principal • Operation theatre personnel. • Characteristics of ophthalmic assistant. • Operation theatre attire. • Cleaning of operation theatre. • Instruments processing in operation theatre. • Hand washing, surgical scrubbing, gowning, gloving • Role and responsibilities of scrub personnel. • Role and responsibilities of circulating personnel. • Trolley preparation for different surgery. • List out the basic ophthalmic instruments used in ocular surgery. • Introduction to Operation theatre equipment. • Knowledge about the consumables and non-consumables. • OT hazards and risk management. <p>3.2 Anesthesia</p> <ul style="list-style-type: none"> • Definition • Types • Anesthesia in ocular surgery • Complication • Equipment used in anesthesia

	<ul style="list-style-type: none"> • Role and responsibilities of anesthetics ophthalmic assistant • Management of recovery patient <p>3.3 Pre-operative care</p> <ul style="list-style-type: none"> • Definition • Purposes • Articles require for pre-operative care • component • Counseling • Pre -operative care for different surgery <p>3.4 Post- operative care</p> <ul style="list-style-type: none"> • Definition • Purpose • Articles require • Care of patient in recovery room • Post- operative care for different surgery • Post- operative dressing ,instruction, discharge- and follow up <p>3.5 Drug Administration</p> <p>Review from pharmacology</p> <ul style="list-style-type: none"> • Route of administration of drugs <ul style="list-style-type: none"> ➤ Oral medication ➤ Route of ocular medicines. ➤ Preparing medication from ampoule ➤ Preparing medication from vials. ➤ Intramuscular injection ➤ Intravenous medication <ul style="list-style-type: none"> ○ Venepuncture ○ Starting new I/V line ○ Intravenous care ○ Complication of I/V infusion • Instilling medication into eye/nose • Topical medication. • Rules for administration of medicine.
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>

Unit 4: Ocular surgery (Assisting)	Theory: 78 hrs	Lab/practical : 15 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Explain instruments, step, consumable and medicines in cataract surgery. 2. Explain instruments, step, consumable and medicines in Glaucoma surgery 3. Describe instruments, step, consumable and medicines in nasolacrimal passage surgery. 4. Describe instruments, step, consumable and medicines in strabismus surgery. 5. Explain instruments, step, consumable and medicines in keratoplasty surgery. 6. Describe instruments, step, consumable and medicines in vitro-retinal surgery. 	<p>4.1 Cataract.</p> <ul style="list-style-type: none"> • Review different types of cataract surgery. • List the instrument of SICS+IOL • List the instrument of phaco emulsification + IOL • Step of surgery (phaco, SICS ,ECCE) • Consumable and medicines used in cataract surgery. <p>4.2 Glaucoma</p> <ul style="list-style-type: none"> • Review different types of glaucoma surgery. • List the instruments of different types of glaucoma surgery. • Steps of surgery. (Trabeculectomy, valve implant, Mitomycin/ 5fu) • Consumable and medicines used in glaucoma surgery. <p>4.3 Surgery of the Nasolacrimal passage.</p> <ul style="list-style-type: none"> • Review the types of DCR surgery. • List the instruments of different type of surgery. • Step of the surgery.(DCR, Endo DCR, 3snip surgery, Syringing and probing.) • Consumable and medicines used in lacrimal sac surgery. <p>4.4 Strabismus</p> <ul style="list-style-type: none"> • Review the types of strabismus surgery. • List the instruments used in surgery. • Step of the surgery.(one muscles/two/three muscles) • Consumable and medicines used in surgery. <p>4.5 Keratoplasty</p> <ul style="list-style-type: none"> • Review of keratoplasty surgery • List the instruments of different type of keratoplasty(PK/TPK/PK IOL/DSEK/DEMEK • Step of the surgery. • Consumable and medicines used in surgery. <p>4.5 Vitrectomy</p> <ul style="list-style-type: none"> • Review of different type of vitrectomy surgery • List the instruments used in vitrectomy surgery.(Open sky vitrectomy/Vitrectomy with gas/Vitrectomy with silicon oil,vitrectomy with membrane peeling/Endo laser/Fluid air exchange 	

<p>7. Explain instruments, step, consumable and medicines in different type of lid surgery.</p> <p>8. Describe instruments, steps, consumable and medicines in orbitotomy surgery.</p> <p>9. Describe instruments, steps, consumable and medicines in enucleation surgery.</p> <p>10. Explain instruments, step, consumable and medicines in evisceration surgery.</p> <p>11. Explain instruments, step, consumable and medicines in exenteration surgery.</p> <p>12. Explain instruments, step, consumable and medicines in excisional biopsy.</p> <p>13. Explain instruments, step, consumable and</p>	<ul style="list-style-type: none"> • Steps of surgery. • Consumable and medicines used in surgery. <ul style="list-style-type: none"> ○ Retinal detachment • Review of different types RD surgery. • List the instruments used in RD surgery(Pneumatic retinopexy, Cryobuckle, Bandbuckle • Step of surgery • Consumable and medicines used in surgery. ○ Lid surgery. • Review of different type of lid surgery. • List the instruments used in different types of lid surgery.(Entropion, Ectropion,Ptosis and reconstruction) • Step of surgery. • Consumable and medicines used in surgery. ○ Orbitotomy • Review of different type of orbitotomy surgery. • List the instruments used in surgery.(Anterior orbitotomy, Middle orbitotomy,Posteriororbitotomy with bone work. • Step of surgery • Consumable and medicines used in surgery. <p>4.9 Enucleation</p> <ul style="list-style-type: none"> • Review of Enucleation surgery. • List the instruments used in surgery. • Step of surgery. • Consumable and medicines used in surgery. <p>4.10 Evisceration</p> <ul style="list-style-type: none"> • Review of evisceration surgery. • List the instruments used in surgery. • Step of surgery. • Consumable and medicines used in surgery. <p>4.11 Exenteration</p> <ul style="list-style-type: none"> • Review of exenteration. • List the instruments used in surgery. • Step of surgery. • Consumable and medicines used in surgery. <p>4.12 Excision biopsy</p> <ul style="list-style-type: none"> • List the instruments used in surgery. • Step of surgery(Small, Medium, Big) • Consumable and medicines used in surgery.
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<p>medicines in electroepilation.</p> <p>14. Explain instruments, step, consumable and medicines in pterygium excision and conjunctival graft.</p>	<p>4.13 Electro-epilation</p> <ul style="list-style-type: none"> • Review the anatomy of lid and disorder. • List the instruments use in electro- epilation. • Step of epilation. • Consumable and medicines used in electro epilation. <p>4.14 Pterygium excision and conjunctival graft.</p> <ul style="list-style-type: none"> • Review of anatomy and disorder of conjunctiva. • List the instruments use in pterygium excision and conjunctival graft. • Step of surgery. • Consumable and medicines used in surgery. 	
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>	
<p>Unit 5: Minor extra ocular surgery.</p>	<p>Theory: 25 hrs</p>	<p>Lab/practical : 10 hrs</p>
<p>Objectives:</p>	<p>Content:</p>	
<p>1. Perform preparation of patient, surgical area, step of surgery, possible complication and their management of extra ocular surgeries.</p> <p>2. Understand instruments, trolley preparation, consumable and post –operative management of entropion, chalazion, lid laceration repair, incision and drainage of lid abscess and externum.</p>	<p>Chalazion I and C</p> <p>5.1 Review anatomy and physiology of the eye lid.</p> <ul style="list-style-type: none"> • Disorder of the lid. <ul style="list-style-type: none"> ○ Chalazion. ○ Entropion. ○ Lid Abscess. ○ Lid laceration (Trauma). <p>5.2 Chalazion incision and curettage</p> <ul style="list-style-type: none"> • Introduction • Instruments. • Consumable. • Patient Preparation/ Trolley preparation • Step and procedures of surgery. • Complication of surgery. • Post- operative care. <p>5.3 Entropion Correction</p> <ul style="list-style-type: none"> • Introduction. • Instruments. • Consumables. • Patient Preparation/Trolley preparation. • Step and procedures of surgery. • Complication of surgery. • Post- operative care. 	

	<p>5.4 Lid abscess Incision and Drainage.</p> <ul style="list-style-type: none"> • Introduction. • Instruments. • Consumable. • Patient preparation/Trolley preparation. • Step and procedure of surgery. • Complication of surgery. • Post- operative care. <p>5.5 Lid laceration repair.</p> <ul style="list-style-type: none"> • Introduction • Instruments. • Consumables. • Patient preparation/Trolley preparation. • Step and procedure of the surgery. • Complication of the surgery. • Post- operative care.
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>

Community Ophthalmology- I

Total: 156 hrs

Theory: 117 hrs

Practical: 39 hrs

Course Description

This course provides the knowledge and skill to the students to plan, implement, monitor and evaluate the eye health need and interventions in defined population. Developing tools to assess the magnitude of eye problem calculate disease burden and make conversant with current national and global eye health strategies and plan on eye health. Make conversant with importance of community participation in eye health including concept of primary health/eye health care.

Course Objectives

At the end of the course, the students will be able to:

- a) Assess quality of eye health at community, state and national level
- b) Manage community participation for planning and implementing eye care programs.
- c) Conduct and evaluate eye health intervention programs
- d) Organize primary eye care training to different stakeholders

Recommended Textbooks

1. Park's Textbook of Preventive and Social Medicine, by K. Park. Published by M/S BanarasidasBhanot, Jabalpur, India. Current edition.

Reference Books and published materials

2. Global Action Plan, WHO Publications
3. National Eye Health Policy, MoHP
4. WHO world Report on Vision, WHO
5. IAPB Vision Atlas - IAPB
6. Epidemiology of Blindness in Nepal, NNJS publications
7. Cataract surgical outcome and predictors of outcome in Lumbini Zone and Chitwan district of Nepal, YD Sapkota
8. Midterm evaluation of eye care services in Nepal-2011, MoHP publication

COURSE CONTENT

Course: Community Ophthalmology - I	
Unit 1: Primary Health Care and its scope	Theory: 30 hrs Practical: 10 Hrs.
Sub-unit 1.1: Health care of people: Concept of health	
Objectives:	Content:
<ol style="list-style-type: none"> 1. Concept of health as given by Alma-Ata declaration/WHO – Primary health care, its definition and elements, 2. Able to measuring disease burden 	<ol style="list-style-type: none"> 1. Concept of health given by Alma-Ata declaration/WHO. 2. Physical mental and social dimensions of health. 3. Characteristic features of physically, mentally and socially healthy person with examples. 4. Elements of PHC 5. Essential health care services 6. PHC related national health programs/eye care programs 7. Method of measuring disease burden in community (Magnitude, prevalence, incidence, endemicity, epidemic and social burden and financial burden)
Evaluation methods: written examinations, viva	Teaching / Learning Activities / Resources: classroom instruction, instructor led discussion, textbook self-study, related charts and handouts
Unit 2: Primary Health Care	Theory: 20 hrs
Sub-unit 2.1: Define Health and determinants of health	
Objectives:	Content:
<ol style="list-style-type: none"> 1. List determinants of health by category. 2. Explain how a particular determinant is related to a disease /health problem. 3. Describe the scope of health care. 4. State definitions of the levels of health care: 5. Mention the purposes of public health. 6. Discuss the concept of prevention. 7. Categorize levels of prevention 	<ol style="list-style-type: none"> 1. Determinants of health. 2. Relationships between disease and the determinants of health with examples 3. Scope of health care: promotive, preventative, curative, rehabilitative. 4. Level of health care: primary, secondary and tertiary 5. Functions and goals of public health. 6. Concept of prevention 7. Levels of prevention with examples
Evaluation methods: written examinations, viva	Teaching / Learning Activities / Resources: classroom instruction, instructor led discussion, textbook self-study, related charts and handouts
Unit 3: Primary Health Care	Theory: 25 hrs Practical: 12 Hrs.
Sub-unit 3.1: Community participation in health care	
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe community participation. 2. Explain why community participation in health care is important. 3. Mention the examples of community participation. 	<ol style="list-style-type: none"> 1. Concept of community participation and measuring it. 2. Importance of community participation. 3. Components of community participation.

Evaluation methods: written examinations, viva	Teaching / Learning Activities / Resources: classroom instruction, instructor led discussion, textbook self-study, related charts and handouts
Unit 4: Primary Health Care	Theory: 32 hrs Practical: 17 Hrs.
Sub-unit 4.1: Planning and priority setting in health	
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define eye health status of the country 2. Set priority in eye health with available information and eye/health indicators. 	<ol style="list-style-type: none"> 1. Health/Eye health status indicators. 2. Uses of health indicators. 3. Basic health profile of Nepal. 4. Health care priority setting: principles, method and challenges. 5. Prevalence and incidence blindness and visual impairment in Nepal. 6. Prevalence of blindness and visual impairment at global and neighboring country/SAARC 7. Calculation of CSR, CSC and WHO standard of visual outcome.
Evaluation methods: written examinations, viva	Teaching / Learning Activities / Resources: classroom instruction, instructor led discussion, textbook self-study, related charts and handouts
Unit 5: International Eye Health	Theory: 10 hrs
Sub-Unit 5.1: Sustainable Development Goals (SDG), WHO Action Plan, WHO and IAPB eye health strategies at global and regional level	
Objectives:	Content:
<ol style="list-style-type: none"> 1. State in brief the history, background, goals and target of Sustainable Development Goals (SDG). 9. Understand relation between SDG and eye health. 	<ol style="list-style-type: none"> 1. Principles and goals of the “SDG” program. 2. Sustainable development goals 3. Vision of SDG given by UNDP 4. Relationship between SDG goal and eye health a 5. Nepal’s achievement on MDGs
Evaluation methods: written examinations, viva	Teaching / Learning Activities / Resources: classroom instruction, instructor led discussion, textbook self-study, related charts and handouts

Third Year

1. Health Care Management
2. Ocular Disorder- II
3. Community Ophthalmology- II
4. Low Vision and Optical Dispensing
5. Clinical Practice- I (Hospital Based)
6. Clinical Practice- II (Hospital Based)
7. Clinical Practice- III (Community Based)

Health Care Management

Total: 117 hrs

Theory: 78 hrs

Practical: 39 hrs

Course Description

This course introduces the student to concepts about management of health care services, as it applies to the operations of an eye centre and community eye hospital. This course teaches about the fundamental principles of management, eye centre management, health care system in Nepal, National eye health policy and programmes, eye health human recourse in Nepal, eye health related organizations and agencies, safety and disaster management, entrepreneurship, professional ethics and health related laws. The student will acquire the necessary knowledge and skill to deal effectively with the diverse challenges of health service management.

Course Objectives

On completion of the course the student will be able to:

1. Explain the theories, principles and components of health care management.
2. Manage a Eye Centre in the real setting
3. Describe the eye health policy, tell its philosophy, and identify its strengths and weaknesses.
4. Apply the principles of Inventory management
5. Identify the different levels of eye health human recourse in Nepal and describe the functions of the eye health human recourse in developing world
6. Prepare a business plan of Eye Centre
7. Prepare the disaster preparedness plan for Eye Centre
8. Explain the code of ethics of the Ophthalmic Assistant.

Recommended Texts

1. Macmohan, R. et al. On Being In Charge, A guide to Management in Primary Health Care. WHO. Current edition.
2. Dixit, H. The Quest for Health. Educational Enterprise, (P) Ltd., Kathmandu. 1999.
3. Pradhananga, Y. Health Management. Council for Technical Education and Vocational Training, Bhaktapur, Nepal. 2055 B.S.-
4. Kamala, T. & Bishnu, R. Leadership and Management for Nurses. Health Learning Materials Centre, Tribuvan University, Kathmandu. 1990
5. Sapkota, Shiba Prasad, Health Management and Community Health, Vidhyarthee PustakPrakasan, Bhotahity

Reference Texts

1. Human resource Management in Hospital, Khan Faisal MD, Paras Medical Publication, hyderabad, India, current edition
2. Park, K. Textbook of Preventive and Social Medicine, Bhandrasidas Bhanot, Jabalpur, India. 2000.

COURSE CONTENT

Course: Health Care Management	
Unit 1: Introduction of Health Care Management	Hrs. theory: 26
Sub-unit 1.1: Introduction to Health Care Management	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define Health. 2. Define management, health management and health care management. 3. Differentiate between management & administration. 4. Describe the function of management. 	<ol style="list-style-type: none"> 1. Definition of health and its determination 2. The definitions of management, health management & health care management 3. Principles of management. 4. Concepts of management versus administration. 5. Function of management in the Eye Centre and Eye Hospital context.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Instructor led discussion, reference study assignment
Unit 1: Introduction of Health Care Management	
Sub-unit 1.2: Planning of Health service	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the process and purpose of planning. 2. Describe different types of planning. 3. Explain the planning cycle. 4. Describe the steps of planning. 5. Explain the health planning system in Nepal. 	<ol style="list-style-type: none"> 1. Definition of planning. 2. Types of planning. 3. Planning cycle (PIE cycle) 4. Planning steps. 5. Current health planning system of Nepal.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - classroom instruction
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.3: Organizing of Health Service	Hrs. theory: 3
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the process and purpose of organization. 2. Identify different types of health service organizations. 3. Describe the level of eye care system 	<ol style="list-style-type: none"> 1. Definition of organization. 2. Types of Health Service organizations and their organograms. 3. Organograms of Health structure of Nepal as based on federal system.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.4: Staffing	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define staffing and state the purpose of using a job description. 2. Identify the elements of a job description. 3. Identify the staffing patterns of different 	<ol style="list-style-type: none"> 1. Definition and purpose of staffing. 2. Essential elements of a job description. 3. Staffing patterns of a Community Eye Centers and Secondary Eye Hospital.

health institutions Nepal	
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.5: Directing	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the meaning and purpose of directing. 2. Describe the purpose, method and techniques of supervision 3. Explain the purpose and tools of monitoring. 4. Describe the process of monitoring. 5. Describe the importance of motivation in health care organization. 6. Describe the communication, its type and the importance of communication in health. 7. Discuss the characteristics of leaders and the leadership styles and its advantage and disadvantage of each leadership styles Explain why an autocratic leadership style has historically been most commonly used in Nepal. 	<ol style="list-style-type: none"> 1. Definition of directing. 2. Purpose of directing. 3. Supervision: definition, purpose, importance, techniques and tools 4. Monitoring: definition, purpose, importance, process and tools 5. Theory of motivation, Maslow's need hierarchy, Importance of motivation in health service organizations. 6. Communication, its type and the role of communication in health. 7. Definition of Communication, its type and the role of communication in health. 8. Definition of leadership, Style of leadership, advantage and disadvantage of (autocratic, democratic, laissez faire leadership styles
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.6: Controlling	Hrs. theory: 2
Objectives:	Contents:
<ol style="list-style-type: none"> 1. Define Controlling in health care 2. Explain the Steps of controlling 	<ol style="list-style-type: none"> 1. Definition of controlling 2. Steps of controlling 3. Importance of controlling
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.7: Coordination	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define coordination in terms of health management. 2. Identify different types of coordination. 3. Identify the techniques and processes of coordination. 4. Explain the types of coordination to be used at the EYE CENTRE level. 	<ol style="list-style-type: none"> 1. Definition of coordination. 2. Types of coordination <ul style="list-style-type: none"> - External and internal - Horizontal and vertical 3. Techniques and processes of coordination. 4. Selecting styles of coordination in EYE CENTRE level.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit

Unit 1: : Introduction of Health Care Management	
Sub-unit 1.8: Safety and Disaster in eye centre and hospital	Hrs. theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> 1. Discuss historical events and potential for future disasters from these causes: earthquake, flooding, nuclear explosion. 2. Identify the health risks created by each of these disasters. 3. Describe the policies and procedures developed by the earthquake preparedness committee in central level. 4. Identify the major points of the national guidelines for disaster management. 5. Identify the civil organizations of a community for preserving community welfare in a disaster situation. 6. Describe the role of the In charge of eye centre in coordinating a disaster preparedness response. 	<ol style="list-style-type: none"> 1. Historical events and potential for future disasters from earthquakes, flooding and nuclear explosion. 2. Definition, concepts and types of disasters. 3. Risks to public health created by these disasters. 4. National activities for earthquake, landslide, wildfire storms preparedness 5. Disaster management cycle. 6. National guidelines for the management of major disasters. 7. Coordination of community resources and leadership responsibility for disaster management. 8. Structure and responsibility of District Disaster Coordination Committee 9. Composition, role and mobilization mechanism of Rapid response team in disaster preparedness and response activities.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.9: Reporting	Hrs. Theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Discuss the purpose of reporting. 2. Describe the qualities of an effective report. 3. Prepare a simulated eye centre report from a case example. 4. Describe the importance of reporting in eye care centers. 	<ol style="list-style-type: none"> 1. Definition and purpose of reporting. 2. Types of report 3. Characteristics of reporting: Complete, accurate, sequential, timely and understandable. 4. Type of reports used by eye centre
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 1: : Introduction of Health Care Management	
Sub-unit 1.10: Budgeting and Financial Management	Hrs. theory : 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define budget and budgeting. 2. Mention the functions of budget. 3. Discuss the purpose for using a budget in health management. 4. Identify and compare different types of budgets. 5. Discuss the components of budget sheet. 	<ol style="list-style-type: none"> 1. Budgeting: Definition and functions 2. Types of budgets (capital and recurrent) and characteristics of various budgets. 3. Components of budget sheet 4. Tools for financial management (Voucher, ledger, daybook, audit)

Examination methods: written exams (short answer questions)	Teaching / Learning Activities: classroom instruction, textbook self-study -
Unit 2: Health Care System in Nepal	Hrs. theory: 4
Sub-unit: 2.1 Health Care system	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Define “health care system” and explain the purpose and characteristics of a health care system. 2. Describe the history of the development of health services and eye health services in Nepal. 3. Describe type of health care approaches. 4. Identify situations of eye health care system in Nepal. 	<ol style="list-style-type: none"> 1. Definition, characteristics, and purpose of a health care system. 2. History of health system in Nepal. 3. Health care approaches: <ul style="list-style-type: none"> • Ayurvedic • Homeopathic • Allopathic • Naturopathy, Acupuncture 4. History of Eye Health care services in Nepal 5. Current Health care system of Nepal
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - classroom instruction
Unit 3: Eye Centre Management	Hrs. theory: 24
Sub-unit 3.1: Training	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. State the purpose and definition of training. 2. Describe different types of training and tell the advantages and disadvantages of each. 3. Explain the process for assessing the need for training. 4. Describe planning, conduction & evaluation of the training program of subordinate & volunteers 	<ol style="list-style-type: none"> 1. Definition of training. 2. Difference education and training 3. Different types of training. 4. Training Need Assessment (TNA). 5. Importance of training. 6. Training plan, training conduction & training evaluation focus on Primary eye care training
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, field visit
Unit 3: Eye Centre Management	
Sub-unit 3.2: Conduct staff meeting	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Identify the need for a meeting. 2. Describe planning and organizing for an effective meeting. 	<ol style="list-style-type: none"> 1. Importance of maintaining good communication through meetings. 2. Planning and organizing a meeting.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Samples of meeting minutes/invitation letters, practice writing minutes from a simulated meeting Classroom instruction, Demonstration / Practicum

Unit 3: Eye Centre Management	
Sub-unit 3.3: Inventory & Logistic management	Hrs. theory: 6
<ol style="list-style-type: none"> 1. Describe the purpose and process of physical inventory. 2. Differentiate between expendable and non-expendable goods. 3. Define storage and store standard. 4. Describe the procedure for Cold Chain storage of medical supplies. 5. Discuss the essential data of logistics information. 6. Describe the process of calculating and demanding items, for both regular and emergency needs. 7. Describe the process of distributing commodities. 8. Explain the purpose of logistics management. 9. Describe the Logistic Management Information System (LMIS) practice in Nepal. 10. Describe the “six rights” of logistic management. 11. Explain logistic cycle. 	<ol style="list-style-type: none"> 1. Inventory goals and procedures. 2. Classifications of materials. 3. Specialized storage treatment for essential drugs, eye drops, ointments, equipment/instruments. 4. Essential data concepts: <ol style="list-style-type: none"> a. Maximum/minimum stock levels b. Authorized stock level and emergency order point c. Lead time stocking d. Losses/adjustments 5. Emergency and regular calculation and procurement of commodities. 6. Procedures for distribution of commodities. 7. LIFO/FIFO procedure <ol style="list-style-type: none"> 1. Definition and function of logistic management. 2. Six” rights of logistic management. 3. Logistic cycle (Serving customer, product selection forecasting and procurement and inventory management). 4. Stock book maintaining procedure 5. Stock keeping of Optical lenses and frames
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: Classroom instruction, discussion, Acts and Regulations related to financial and administrative matters.
Unit 3: Eye Centre Management	
Sub-unit 3.4 Time Management	Hrs. theory: 2
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe how to compute staff work load. 2. Prepare a timetable of program & activities. <ul style="list-style-type: none"> - Weekly - Monthly - Quarterly - Yearly 	<ol style="list-style-type: none"> 1. Concept of time management. 2. Tools of time management with example.
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study - Classroom instruction, Practicum, visit institution, Classroom practice.

Unit 3: Eye Centre Management	
Sub-unit 3.5: Health Management Information System (HMIS) and Medial record	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Explain the purpose of the MIS and HMIS. 2. Identify the important benefits of this system. 3. Describe process of HMIS 4. Explain the use of the different types of HMIS forms. 5. Describe the use of the HMIS records and reports. 6. Demonstrate how to prepare monthly, quarterly, and annual HMIS reports. 7. Formulate Monthly and annual report 	<ol style="list-style-type: none"> 1. Function and purpose of MIS and HMIS. 2. importance of HMIS 3. The Process of HMIS with example 4. Application of the HMIS forms. 5. Differences between types of records and reports. 6. Monthly, quarterly & annual health reporting system
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: Text book self-study, Classroom instruction, classroom practice, field visit to relevant health institutions
Unit 3: Eye Centre Management	
Sub-unit 3.6: Quality assurance	Hrs. theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> 1. Compare different definitions of quality health care. 2. Identify reasons for using the quality assurance (QA) program. 3. Define the term “standards” and give examples of health care standards. 4. List the ways that standards help to close the gap between actual performance and desired outcomes. 5. Give examples of ways to improve patient satisfaction with services. 6. Use the methods and principles of QA to identify and plan a solution to a real health care problem. 	<ol style="list-style-type: none"> 1. Components and concepts of quality health care. 2. Rationale for quality assurance implementation. 3. The focus of quality assurance principles: <ol style="list-style-type: none"> a. Focus on patient/staff needs b. Focus on how things are done (process/systems) – do not blame the individual. c. Focus on facts (don’t make assumptions or guesses). d. Focus on team approach to problem solving. 4. Patients satisfaction tools
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: Classroom instruction, field visit,

Unit 4: Eye Health Policy and Plan	Hrs. theory: 6
Sub-unit 4.1: Eye Health Policy and Program	Hrs. theory: 6
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the components of Eye Health Policy 2074. 2. Describe the current and periodic eye health plan. 3. Identify the objectives, targets and activities of eye health programmes 4. Mention the names of multilateral, bilateral, INGOs and NGOs activating in the eye health sector of Nepal 	<ol style="list-style-type: none"> 1. Current Eye Health Policy (Objective, targets and components). 2. Objectives, targets and activities (to be carried out at eye centre level) of National eye health programs eg: <ol style="list-style-type: none"> a. Diabetic Retinopathy Program b. Blindness alleviation Program 3. Organization working in eye health sector in Nepal
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: Classroom instruction, field visit,
Unit 5: Eye Health Human Resource in Nepal	Hrs. theory: 4
Sub-unit 5.1: Development of Human Resources in Eye Health Sector in Nepal	Hrs. theory: 4
Objectives:	Content:
<ol style="list-style-type: none"> 1. Describe the Role of various Eye Health Human resource (EHHR)R in Nepal 2. Mention the institutions involved in EHHR Development in Nepal. 3. Prepare JD of OA 	<ol style="list-style-type: none"> 1. EHHR positions in Nepal: Ophthalmologist, Optometrist, Ophthalmic officer, Ophthalmic assistant, Eye Health Worker, Eye healer, Lab Technologist, Ocularist, Optical Dispenser, Counselor, Pharmacy Assistant and Pharmacist. 2. Prepare & explain Job description of Ophthalmic Assistant
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: Classroom instruction, relevant literature and brochures of concerned institutions, field visit to selected institute.
Unit 6: Health Issues and Professional Practice	Hrs. theory: 8
Sub-unit 6.1: Entrepreneurship	Hrs. theory : 8
Objectives:	Content:
<ol style="list-style-type: none"> 1. Discuss the concept of entrepreneurship. 2. Discuss how the community and Eye Centre might benefit if the Eye centre began a private profit making business in addition to his role as eye centre in charge 3. Identify the potential opportunities for unethical actions to occur when the In charge of eye centre works simultaneously at two jobs. 4. Discuss ways to prevent unethical occurrences by the entrepreneur. 	<ol style="list-style-type: none"> 1. Goals and process of small business establishment and management. 2. Complimentary goals of small business and community welfare. 3. Business opportunities which meet community needs. 4. Ethical considerations of entrepreneurship and role of In charge of eye centre. 5. Principles for moral examination to avoid conflict of interest situations
Examination methods: written exams (short answer questions)	Teaching / Learning Activities: textbook self-study, Classroom instruction, assign a prepare a business plan

Unit 7: Health Care Law and Professional Councils	Th. Hrs: 6
Sub Unit: 7.1 Health Care Law & Professional council	Th. Hrs: 6
Objectives:	Contents:
<ol style="list-style-type: none"> 1. List the health related law in Nepal 2. List the professional council in health sector 3. Mention the role of Nepal Health Professional Council (NHPC) 4. Explain the function of NHPC 	<ol style="list-style-type: none"> 1. List out the existing health related law in Nepal 2. Explain different professional councils in health sector 3. Establishment and Formation of NHPC 4. Explain the objectives, role and function of NHPC 5. Describe professional ethics and Code of conduct of a Ophthalmic Assistant

Practical Tasks:

<p>Practical Tasks: Students will perform at least following performance in class room settings. 39 hours</p> <ol style="list-style-type: none"> 1. Conduct meeting and write a minute in simulative situation - 2 hr 2. Write an official letter (invitation, demand for commodity, leave and submission letter) -2 hr 3. Prepare a duty roster - 2 hr 4. Prepare a weekly/monthly report of eye centre- 4 hr 5. Prepare the tools for supervision - 2 hr 6. Prepare a monitoring tool- 2hr 7. Prepare a evaluation tool- 2hr 8. Demonstrate journal voucher- 2hr 9. Prepare simple budget sheet- 4 hr 10. Prepare a sample job description- 2 hr 11. Make a goods register (Jinsi Khata)- 2hr 12. Formation of Operational/management and Management Committee - 2 hr 13. Leave and process of having leave at eye centre level- 1 hr 14. Prepare a business plan for eye centre- 4 hr 15. Prepare a sample report- 4hr 16. Prepare sample stock book- 2 hr
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Ocular Disorder –II

Total: 117 hrs

Theory: 117 hrs

Practical: 0 hrs

Course Description

This course enables the students to deal with the different mechanical and non mechanical injuries regarding their clinical features, diagnosis and treatment modalities. This course also guides students to perform first aid management and the urgent referral for the case for surgical management. This course also gives knowledge about the different causes of sudden loss of vision, its clinical features and management.

Course objectives

At the end of the course, the students will be able to:

1. Perform the history taking, clinical examination, diagnosis and provide the available treatment.
2. Decide to perform the referral in cases of ocular trauma (both mechanical and non mechanical).
3. Gain the sound clinical knowledge as they can be competent enough for the various primary treatment of the different eye conditions especially related to the eye.

Reference text books

1. 'Anatomy and physiology of the eye' by A K Khurana- JP enterprises current edition

Reference book

1. 'Parson's diseases of the eye Ramanjit Sihota and Radhika Tandon- Elsevier' 22nd edition
2. 'Clinical ophthalmology' by Brad bowling 8th edition

COURSE CONTENT

Unit 1: Closed globe injury	Theory: 40hrs
Objectives:	Content:
<ol style="list-style-type: none">1. Describe the symptoms of corneal and conjunctival foreign body.2. Demonstrate the clinical examination of conjunctiva with eversion and double eversion.3. Demonstrate the clinical examination of cornea in cases of trauma with foreign body.4. Perform corneal staining in cases of corneal abrasion with underlying foreign body.5. Describe the symptoms of lid and adenexal trauma.6. Demonstrate the clinical examination of lids and adenexae in cases of mechanical and non mechanical trauma.7. Develop the competency to decide for the	<ul style="list-style-type: none">• Mechanical injuries<ol style="list-style-type: none">i. Extra ocular foreign body : Conjunctival , cornealii. Blunt trauma : mode of injury, mechanism of injuryiii. Classification of blunt traumaiv. Ocular findings of blunt trauma,v. Initial management and referral of cases of blunt traumavi. Lid and adenexal injury: Contusion, lacerationvii. Fractures of orbit- clinical features, diagnosis and referral.

<p>needful referral to the higher centres.</p> <p>8. Able to provide first aid treatment</p> <p>9. Able to know when and whom to refer and counsel of the patients</p>	
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>
<p>Unit 2: Open globe injury -I</p>	<p>Theory: 20 hrs</p>
<p>Objectives:</p>	<p>Content:</p>
<p>1. Describe different types of Perforating eye injuries.</p> <p>2. Describe about clinical features of Perforating eye injuries with / without retained intraocular FB.</p> <p>3. Discuss on issues regarding diagnosis and referral for Perforating eye injuries.</p> <p>4. Describe different types of non mechanical injuries.</p>	<p>1. Perforating eye injuries: corneal, scleral and corneo-scleral</p> <p>2. Perforating eye injuries with/ without retained intraocular FB-clinical features, diagnosis and referral</p> <p>3. Non mechanical injuries</p> <p>a. Chemical injury – acid/ alkali</p> <p>b. Thermal</p> <p>c. Electrical</p> <p>d. Radiational</p>
<p>Evaluation methods: written exam, viva, performance observation in clinical setting</p>	<p>Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice</p>
<p>Unit 3: Open globe injury -II</p>	<p>Theory: 20hrs Lab/practical : hrs</p>
<p>Objectives:</p>	<p>Content:</p>
<p>1. Describe the symptoms and signs of perforating eye injuries.</p> <p>2. Demonstrate the torch light and slit lamp examination of perforating eye injuries.</p> <p>3. Perform the first aid management of the perforating eye injuries</p> <p>4. Counseling of the patients of perforating eye injuries</p> <p>5. Decide the referral of the perforating eye injuries to higher eye centers.</p> <p>6. Describe the symptoms and signs of acids and alkali injuries.</p> <p>7. Differentiate between acid and alkali injuries.</p> <p>8. State the management of acid and alkali injuries.</p> <p>9. Describe the measures of first aid management of acid and alkali injuries.</p>	<p>1. Signs and symptoms of Perforating eye injuries corneal, scleral or corneo-scleral.</p> <p>2. Signs and symptoms of Perforating eye injuries with or without retained intraocular FB</p> <p>3. Non mechanical injuries</p> <p>i. Clinical features, grading and management of chemical injuries.</p> <p>ii. Clinical features and treatment of thermal injuries.</p> <p>iii. Clinical features and treatment of Electrical injuries.</p> <p>iv. Clinical features and treatment of Radiational injuries.</p>

10. Describe the preventive measures to avoid the chemical and non chemical eye injuries.	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
Unit 4: Sudden loss of vision.	Theory: 37 hrs Lab/practical : hrs
Objectives:	Content:
<ol style="list-style-type: none"> 1. Enlist causes of sudden loss of vision 2. Mention the types of Retinal detachment. 3. Define Retinal detachment. 4. Discuss the causes, symptoms and signs of Rhegmatogenous, Exudative and tractional detachment. 5. Define Endophthalmitis. 6. List the causes of Endophthalmitis. 7. List the symptoms and signs of Endophthalmitis. 8. List the clinical features and management of CRAO. 9. Define Panophthalmitis. 10. Discuss the causes and clinical features of Panophthalmitis. 11. Define acute angle closure glaucoma. 12. List the causes and clinical features of acute angle closure glaucoma. 	<ol style="list-style-type: none"> 1. Causes of Sudden loss of vision 2. Sudden loss of vision: <ol style="list-style-type: none"> i. Clinical features and management of Retinal detachment. ii. Clinical features and management of Endophthalmitis. iii. Clinical features and management of CRAO. iv. Clinical features and management of acute angle closure glaucoma.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice

Community Ophthalmology- II

(Foundations of Health Education, Health Promotion and eye health research)

Total: 195 hrs

Theory: 117 hrs

Practical: 78 hrs

Part I: Foundations of Health Education and Health Promotion

Part II: Research Strategy and community diagnosis

Course Description

Part I: (Theory 78 hrs + Practical 39 hrs)

This course teaches the educational aspects of public health management, which is an indispensable component for preventive health, a chief responsibility primary eye care personnel. The course teaches the concepts and theories of health behaviors and the procedure for planning, implementation and overall management of eye/health education program. The aim of this course is to develop the necessary skills for effective application of health education at primary level of eye care services.

Part II: (Theory 39 hrs + Practical 39 hrs)

This course also comprises on comprehensive idea and be able to explain research and epidemiological aspects, concept importance, type of research carried out in eye health, interpret the research findings and perform community diagnosis as practical of health need assessment.

Objectives

At the end of the course, the students will be able to:

1. Appreciate the significance of health education and health promotion in preventive, promotive, curative and rehabilitative health care.
2. Identify and apply the theories and principles of health behavioral sciences in the process of Health education.
3. Identify, select and utilize suitable health education and health promotion methods and
4. Media for successful implementation of health service programs.
5. Plan, implement and evaluate health education and health promotion programs.

Recommended Textbooks

1. Pradhan, H.B., A textbook of Health Education. Educational Resources for Health, 1995.
2. Park, J.E. and Park, K., Textbook of Social and Preventive Medicine (20th ed.) 1997.

COURSE CONTENT

Course Part I: Foundations of Health Education and Health Promotion	Hrs. theory: 78	Hrs. lab: 39
Unit 1: Introduction to health education	Theory: 24 hrs	Hrs. lab: 39
1.1: Overview of health education	Theory: 4 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Discuss the aims of health education. 2. Identify factors which influence health, and will therefore influence health education. 3. Give examples of the way each factor can affect health. 4. Discuss the significance of health education in preventive, promotive, curative and rehabilitative health care. 5. Give an example of how health education can help prevent disease. 6. Give an example of how health education helps in curing a disease. 7. Give an example of how health education can prevent disease. 	<ol style="list-style-type: none"> 1. Purpose and objectives of health education. 2. Definition of health education. 3. Factors influencing health: <ol style="list-style-type: none"> i) Heredity ii) Environment iii) life style iv) socio- economic and cultural condition v) health services vi) Geographical and environmental factors. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
1.2: Principles and scope of health education	Theory: 4 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe the scope of health education. 2. Explain the principles of health education; give an example for each one. 3. Discuss which health post staffs are responsible for health education. 4. Tell how the health assistant can promote health education at the health post 	<ol style="list-style-type: none"> 1. Scope of health education 2. Principles of health education 3. Persons responsible for health education. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
1.3: Methods	Theory: 6 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe the advantages and disadvantages of the different types of health education media. 2. Identify criteria used for selecting appropriate media for a method of providing education. 3. Select the appropriate media for health education programmes. 4. Describe how to prepare and use audio and 	<ol style="list-style-type: none"> 1. Meaning and definition of methods of health education. 2. Advantages and disadvantages of each method. 3. Measures to make each method effective. Individual method: Interview , Counseling 	

visual aids.	4. Group methods: Group discussion, Field trip demonstration, Role-play, brainstorming, symposium, workshop and mini-lecture.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
1.4: Mass methods	Theory: 4 hrs
Objectives:	Content:
1. Describe the methods for providing education to large groups of people. 2. Identify the advantages and disadvantages of each method.	1. Mass method: Lecture, Exhibition , Campaign 2. Criteria for the selection of appropriate methods.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice
1.5 : Overview of Media	Theory: 6 hrs
Objectives:	Content:
5. Describe the advantages and disadvantages of the different types of health education media. 6. Identify criteria used for selecting appropriate media for a method of providing education. 7. Select the appropriate media for health education programmes. 8. Describe how to prepare and use audio and visual aids.	1. Meaning of each media: a. Audio aids: radio cassette player. b. Visual aids: poster, pamphlet, flip chart, model, real objects, bulletin board, wall chart, flannel graph. c. Audio visual aids: TV, multimedia projector 2. Uses of each media. 3. Criteria for the selection of media. 4. Process of preparing each media. 5. Measures to use each media effectively.
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice
Unit 2: Fundamental Factors of Health Education	Theory: 5 hrs
2.1: Communication	Theory: 5 hrs
Objectives:	Content:
1. Define communication. 2. Discuss types of communication. 3. Discuss principles of communication. 4. List the basic elements of communication. 5. Identify barriers of communication.	1. Scope of communication. 2. Importance of communication. 3. Principles of communication. 4. Ways of communication. 5. Methods of communication

Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 3: Health education material	Theory: 8 hrs	Lab/practical : 5 hrs
3.1: Overview of Material	Theory: 8 hrs	Lab/practical : 5 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe the materials for providing education Identify the advantages and disadvantages of each material. 2. Collect health education materials from different Organizations. 3. Prepare simple media for health education <ol style="list-style-type: none"> a. Poster b. Pamphlet c. Flip chart d. Flannel graph 	<ol style="list-style-type: none"> 1. Resources for community education materials. 2. Procedures for developing simple media. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 4: Implementation of Health Education Programs	Theory: 4 hrs	Lab/practical : 10 hrs
4.1: practice of health education methods, Media and Material.	Theory: 4 hrs	practical : 10hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Identify the important characteristics of the following health education methods in the Classroom. 2. Practice using these methods in classroom. 3. Use these one or more of these methods effectively in the health education program: <ol style="list-style-type: none"> a. Counseling b. Group discussion c. Role play d. Demonstration e. Classroom instruction, textbook. handouts, group discussion f. Exhibition. 	<ol style="list-style-type: none"> 1. Apply theory learned from previous lessons. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Unit 5: Fundamental Factors of Health Education	Theory: 16 hrs	
5.1: Motivation	Theory: 4 hrs	Lab/practical : 4 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Identify the theories and principles of motivation. 2. Apply the theories and principles of motivation in the process of health education. 3. Give an example of intrinsic and extrinsic motivation. 4. Explain how you might encourage a person to quit smoking by applying the principles of motivation. 5. Tell how to apply a theory of motivation to a health education class on dental care. 	<ol style="list-style-type: none"> 1. Meaning and definition of motivation. 2. Kinds of motivation. <ol style="list-style-type: none"> a. Instinct b. Intrinsic 3. Principles of motivation. <ul style="list-style-type: none"> - Maslow's theory of human motivation 4. Importance of motivation in health education. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
5.2: Learning	Theory: 7 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe the steps of the learning process. 2. Discuss factors which increase or decrease learning. 3. Explain the theories and principles of learning. 4. Give an example to illustrate the principle "relevancy improves learning" when teaching the mother of a newborn. 5. Apply other principles of learning to health education situations. 6. Describe the different ways of learning. 7. Identify your own ways of learning. 8. Describe the best way to teach "tooth brushing" to someone who learns by hearing; by seeing; by doing. 9. State Ralph Gary's principle of learning; give an example of this. 	<ol style="list-style-type: none"> 1. Meaning and definition of learning. 2. Ralph Gary's principle of learning. 3. Ways of learning. 4. Steps of learning process. 5. Factors affecting learning: <ul style="list-style-type: none"> - Biological factors such as age, condition of sensory organs. - Physical factors - Socio-cultural factors - Psychological factors 6. Ways of learning: <ul style="list-style-type: none"> - Learning by hearing. - Learning by seeing. - Learning by doing - Learning by repetition - Learning by imitation. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

5.3: Change process	Theory: 5 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Explain the theories of change process. 2. Describe how change process is part of health education. 3. Identify one health behavior which is best changed by force. 4. Identify one health behavior which illustrates a change made by identification. 	<ol style="list-style-type: none"> 1. Concept of change and change process. 2. Ways of bringing change: <ol style="list-style-type: none"> 8. Change by force 9. Change by identification 10. Change by internalization. 3. Resistance to change. 4. Ways of overcoming the resistances. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Unit 6: Planning of Health Education Programmes	Theory: 16 hrs	Lab/practical : 8 hrs
6.1: Principles of planning	Theory: 6 hrs	
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe the need for planned health education programmes. 2. Give examples of useful data collection for selecting a needed educational programme. 3. State an example showing how to set priorities of health education needs. 4. Differentiate between general and specific objectives. 5. Describe ways to decide what and how much to teach in an educational programme. 6. Identification of target groups. 7. Selection of appropriate methods and media of health education. 8. Identification of necessary and available resources. 9. Development of details plan of evaluation eg. Time, criteria and methods of evaluation. 	<ol style="list-style-type: none"> 1. Definition concept and importance of planning of health education programme. 2. Steps of planning: <ol style="list-style-type: none"> a. Collection of data and information b. Identifying health and health education needs on priority basis. c. Setting goals and objectives: General objective and Specific objective. d. Identification of target group. e. Selection of appropriate methods and media of health education. f. Identification of necessary and available resources. g. Development of detailed plan of evaluation. E.g. time evaluation, criteria evaluation and methods evaluation. 3. Development of contents. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

6.2 Application of planning	Theory: 5hrs	Lab/practical : 4 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe what is meant by “target group” and give an example. 2. Discuss resources available to the community eye centre. 3. Explain the importance of making plans with sufficient detail. 4. Identify criteria and methods for evaluating a programme. 5. Use all the components of planning to plan a health education programme. 	<ol style="list-style-type: none"> 1. Development of contents to teach 2. Identification of target group. 3. Selection of appropriate methods and media of Health education. 4. Identification of necessary and available Resources. 5. Development of a detail plan for evaluation. <ol style="list-style-type: none"> a. time of evaluation. b. criteria of evaluation . c. methods of evaluation. 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
6.3: Principles of implementation	Theory: 5 hrs	Lab/practical : 4 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. State the strategies of implementation. 2. Give examples of ways to build commitment for a program on vitamin A distribution. 3. Describe ways of training manpower for a program on vitamin A distribution. 4. Identify some local or national resources for a vitamin A distribution program. 5. Tell how a community eye centre in charge might monitor and Supervise the activities of workers for the program. 6. Explain why recording and reporting of program results are important. 	<ol style="list-style-type: none"> 1. Implementation and its strategies. <ol style="list-style-type: none"> a) Building commitment b) Training of manpower c) Mobilizing resources d) Organizing community e) Monitoring of the program. f) Supervision of health education workers g) Recording and reporting 2. Training of Human Resources 3. Community Organization 4. Evaluation of Health Education 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Course: Foundations of Health Education and Health Promotion	Hrs. theory
Unit 7: Health Promotion	Theory: 7 hrs
7.1: Health Promotion	Theory: 7 hrs
Objectives: Students will be able to	Content:
<ol style="list-style-type: none"> 1. Define the term health promotion. 2. Find out the scope of health promotion. 3. Identify the principles of health promotion 4. Discuss on Ottawa Charter 	<p>Class discussion and presentation on</p> <ol style="list-style-type: none"> 1. Definition of health promotion. 2. Scopes of health promotion 3. Principles of health promotion 4. Ottawa charter
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice

Part II : Eye Health Research and Community diagnosis	Hrs. theory: 39 Hrs. Field: 39
Unit 1: Foundation of eye health research	Hrs. theory : 10
Objectives:	Contents:
Explain research and epidemiological aspects, concept importance and type of research carried out in eye health.	<ol style="list-style-type: none"> 1. Definition, characteristics and purpose of health research and its importance in mid-level human resources in eye health. 2. Types of research: descriptive: Population based surveys (Cross sectional), Rapid Assessment of Avoidable Blindness, Trachoma Rapid Assessment, Analytic: Case Control and cohort studies and Experimental (Clinical trial). 3. Definition of terminology used in eye health research such as: disease prevalence, incidence, endemic, epidemic etc. 4. Selection of appropriate reviewing the literature, formulation of research objectives and question, design basic research protocol for a cross sectional study.
Evaluation methods: Written examination, Performance observation, oral test	Teaching / Learning Activities: Lectures
Unit 2: Basic research methodology	Hrs. theory: 14
Objectives:	Content:
<p>Enumerate type of research carried out in eye health and its survey methodology.</p> <ol style="list-style-type: none"> a. Define different between observational and experimental research b. Enumerate sampling procedure c. Explain source and type of data d. Differentiate Qualitative and quantitative research method e. Explain different types of data collection methods f. Explain Data management and analysis in eye health research. 	<ul style="list-style-type: none"> • Design of observational and experimental research • Sampling methods- probability and non-probability • Instrumentation (techniques and tools of research) • Source and types of data (source: primary and secondary, types: qualitative and quantitative) • Rapid method and in-depth method and different types of tools for data collection- using available information, interview, observation, focus group discussion etc. • Data management and analysis (editing, coding, recoding, classification, data entry, cleaning, summary: tabulation (frequency analysis, mean median, mode and graph). • Conclusion, summary and recommendations based on the findings
Evaluation methods: Written examination, Performance observation, oral test	Teaching / Learning Activities: Lectures

Unit 3: Assessing health needs (Community Diagnosis)	Hrs. theory: 15
Objectives:	Content:
Perform followings: <ol style="list-style-type: none"> a. Design community diagnosis and presentation of findings b. Perform Community diagnosis and planning, implementation and evaluation of micro eye health project c. Practical exposure of community diagnosis in field. d. Field work for minimum 2 weeks 	<ol style="list-style-type: none"> 1. Definition of community , definition, concept, importance and use of community diagnosis, process of community diagnosis 2. FACT- facilities available in the community, knowledge, attitudes, , practices, constraints of community diagnosis, training for community people. 3. Methods of community diagnosis- design, target population, sample size, sampling, data collection techniques and tools, data management, analysis and prioritization of eye health problems. 4. Planning, implementation and evaluation of micro eye health projects. 5. Presentation and recommendation of the community health needs. 6. Basic computer skills: MS word and excel
Evaluation methods: Report evaluation, presentation skills, and oral test	Teaching / Learning Activities: field
Unit 4: Community diagnosis (field study/practical)	Practical hrs: 39
Objectives:	Content:
Conduct field study on various eye health issue and problems in particular community and prepare report	<ol style="list-style-type: none"> 1. Identification of an existing eye health problem in particular community 2. Planning and preparation of field study in community 3. Report writing based on prescribed format 4. Application of Methodology for field study 5. Analysis of data, summary, conclusion and recommendation of study
Evaluation methods: Written examination, Class Performance, observation and Viva voce	Teaching / Learning Activities: Lectures

Low Vision and Optical Dispensing

Total: 117 hrs

Theory: 78 hrs

Practical: 39 hrs

Course Description

This course provides the students with knowledge and skill on low vision and ophthalmic dispensing. This course is designed to develop basic but comprehensive knowledge on clinical and functional assessment and rehabilitation of low vision clients and basic ophthalmic dispensing procedures.

Course objectives

At the end of the course, the students will be able to:

1. Define low vision and visual impairment
2. Perform clinical assessment, functional assessment and rehabilitation of low vision clients
3. Read spectacle prescription.
4. Identify different types of frame and lens material and do proper frame selection
5. Mark optical centre and determine lens power
6. Measure inter pupillary distance and perform basic progressive addition lens fitting measurement
7. Troubleshoot complaints and handle patient's questions.

Recommended Texts

1. Clinical optics, Fannin TE and Grosvenor, 1996
2. Clinical low vision, Faye E, Little Brown and company, 1984
3. The low vision Handbook, Barbara Brown
5. Principle of Ophthalmic lenses, Jalie M
6. Refraction, Duke Elder
7. Dictionary of Optometry, Millodot. M, 1993

Reference Books

1. The Essential of low vision practice, Richard L. Brilliant
2. System of Ophthalmic dispensing, Clifford W. Brooks, Irvin M.Boorish
3. Clinical Visual optics, Bennette AG and Rabbetts RB, 1997
4. Primary Care Optometry, Grosvenor TP,1996

COURSE CONTENT

Unit 1: Low vision	Theory: 33 hrs	Lab/practical : 15 hrs
Sub-unit 1.1: visual impairment and low vision	Theory: 11 hrs	Lab/practical : 4 hrs
Objectives:	Content:	
1. Describe visual impairment and low vision	1. Definition and category of Visual impairment -2 hours 2. Definition of low vision-2 hours 3. Causes of low vision- 4 hours 4. Classification of Functional visual deficit in low vision- 3 hours	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Sub-unit 1.2 : low vision device	Theory: 7 hrs	Lab/practical : 3 hrs
Objectives:	Content:	
1. Describe about optical and non optical devices	1. Near and far optical devices in low vision- 4 hour 2. Non-optical devices in low vision- 3 hours	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Sub-unit 1.3 : Basics in Prescribing low vision device	Theory: 6 hrs	Lab/practical : 2hrs
Objectives:	Content:	
1. Know basics in Prescribing low vision device	1. Introduction to basic prescription on low vision devices-6 hours	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	
Sub-unit 1.4: General approach to low vision patient and management	Theory: 9 hrs	Lab/practical : 6 hrs
Objectives:	Content:	
1. Approach low vision patient and know basic management procedures	1. Observation, History taking and approach to a patient with low vision – 3 hours 2. Know basic management options of patients with low vision- 6 hours	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, practice in a simulated setting, supervised clinical practice	

Unit 2: Optical dispensing	Theory: 45 hrs	Lab/practical : 24 hrs
Sub-unit 2.1 : Lens measurement	Theory: 11 hrs	Lab/practical : 7 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Know the Ways of IPD measurement 2. Describe Ways of optical center marking. 3. Determine lens power. 	<ol style="list-style-type: none"> 1. Monocular and binocular IPD measurement with scale and IPD ruler - <u>4hours</u> 2. (with pupilometer- 1 hour 3. Identification of optical centre and marking with lensometer and without lensometer -3 hour) 4. Geneva lens measure for surface power measurement-1 hour 5. Determination of lens power by lensometry-4 hour 6. Determination of lens power by hand neutralization-2 hour 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	
Sub-unit 2.2 : Frame ,lens material and lens design	Theory: 17 hrs	Lab/practical : 11 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe frame features 2. Describe Frame selection 3. Describe lens material and design 4. Describe lens identification 5. Describe lens coating available 	<ol style="list-style-type: none"> 1. Frame types and nomenclature of frames.-2 hour 2. Know about special frame feature and handling the frames.-2 hour 3. Awareness of the dermatological effect of the materials to be able to advice patients accordingly -2 hour 4. Relationship between frame, lenses and face shape - 2 hours 5. Selection of frame on basis of occupation and age-2 hour 6. Lens materials and design -1 hour 7. Associated advantages and disadvantages-2hour 8. Identification of Biconvex, Biconcave, Meniscus, planoconvex and planoconcave lens -2 hour 9. Identification of tints and coating of lens surface and its application-2 hour 10. Associated advantage and disadvantage-1hour 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Sub-unit 2.3: Dispensing bifocal and progressive addition lens	Theory 17 hrs	Lab/practical : 6 hrs
Objectives:	Content:	
<ol style="list-style-type: none"> 1. Describe type of Bifocals 2. Describe progressive addition lens dispensing 	<ol style="list-style-type: none"> 1. Identification of Types of bifocal -2 hours 2. Bifocal segment height/ segment inset and segment drop -2 hours 3. Brief overview of PAL's and clinical decision making -2 hour 4. Know basic construction of progressive addition lens-2 hour 5. Frame selection for progressive- 2 hour 6. Familiarity of different types of progressive lens design and clinical relevance, advantage and disadvantage of different types of lens. -2 hour 7. Choosing right types of progressive lens -2 hour 8. Progressive lens fitting measurement -3 hour 9. Familiarity of different brands of PAL's. -2 hour 	
Evaluation methods: written exam, viva, performance observation in clinical setting	Teaching / Learning Activities / Resources: classroom instruction, supervised clinical practice	

Clinical Practice –I

(Hospital Based)

(Patient Examination and Diagnosis, Counseling, Vision, Refraction, Low Vision, Orthoptic)

Total: 390 hrs

Theory: 0 hrs

Practical: 390 hrs

Course Description

Clinical Practice –I is a 390 hours (10 weeks/ 60 working days) program that aims to provide students an opportunity for meaningful career related experiences by working fulltime in real organizational settings where they can practice and expand upon their classroom based knowledge and skills before graduating. It will also help students gain a clearer sense of what they still need to learn and provides an opportunity to build professional networks. The course is designed to expose the students to develop the skills on general and ocular history taking, visual acuity measurements and refraction. This also provides exposure to different ocular pathological conditions and their management. It also provides additional skills on different types of binocular vision anomalies and vision therapy followed by low vision assessment. The student will be eligible for Clinical Practice-I only after the completion of all classes of the subjects included in the curriculum.

Clinical Practice-I should be completed at least 2 weeks before the start of 3rd year final examination of CTEVT. The institute will make arrangement for Clinical Practice-I. The institute will inform the CTEVT at least one month prior to the Clinical Practice-I placement date along with plan, schedule, the name of the students and their corresponding Clinical Practice-I site.

Course objectives

At the end of the course, the students will be able to:

- Assess visual acuity
- Perform objective and subjective refraction
- Diagnose and managing ocular disease
- Refer if required
- Assess binocular vision and vision therapy
- Assess low vision and rehab

Recommended Texts

- Comprehensive ophthalmology; A.K. Khurana, 6th edition
- Theory and practice of optic and refraction; A.K. Khurana, 3rd edition
- Clinical orthoptics; Fiona J. Rowe, 3rd edition
- Strabismus Simplified; Pradeep Sharma, 2nd edition
- Low visions aids; Monica Chaudhary

Reference Books

- Primary care optometry; Theodor Grosvenor, 5th edition
- Clinical optics; Fannin TE and Grosvenor, 2nd edition
- Essentials of low vision practice; Richard L. Brilliant
- Binocular vision and ocular motility; Von Noorden, 5th edition

Activities

1. Vision- 80 Hours

Students will be posted in vision room where they can learn different types of visual acuity tests for distance and near. This practice unit on vision is intended for developing skills on Visual Acuity (VA) for distance and near with and without correction.

2. Refraction - 120 Hours

Students will be posted in refraction unit where they can learn different methods of objective and subjective refraction. This practice unit on refraction is intended for developing skills on Objective refraction and Subjective refraction.

3. Patient Examination and Diagnosis, Counseling- 120 Hours

Students will be posted in examination room where they can learn General and ocular history taking, Torch light examination, Slit lamp Biomicroscopy, Distance Ophthalmoscopy, Direct and Indirect Ophthalmoscopy, Patient counseling and Patient referral. This practice unit on patient examination, diagnosis and counseling is intended for developing skills on History taking, General ocular examination, Diagnosis and management and Counseling and Referral.

4. Low vision- 25 Hours

Students will be posted in examination room where they can learn, General and ocular history taking, Torch light examination, Slit lamp Biomicroscopy, Distance Ophthalmoscopy, Direct and Indirect Ophthalmoscopy, Patient counseling and Patient referral. This practice unit on low vision is intended for developing skills on Low vision history taking, Ocular examination, Low vision devices, Optical and non- optical devices and Low vision rehabilitation.

Unit 5: Orthoptics- 45 Hours

Students will be posted in Orthoptics room where they can learn, Assessment of EOM, Cover test, Measurement of convergence and accommodation, Measurement of Prism fusional ranges, Assess grades of binocular vision and Vision therapy. This practice unit on orthoptics is intended for developing skills on EOM, Cover test, Convergence, Accommodation, Stereopsis and Fusional vergence range.

Evaluation

Attendance and quality of participation	25%
Case reports (numbers and qualities)	30%
Clinical live skill demonstration: In all 3 given areas	45%
Total:	100%

Clinical Practice- II

(Hospital Based)

(Ocular procedures and Investigations, Ocular Anesthesia, Assist in Surgery, Preoperative Postoperative Management and Sterilization)

Total: 390

Theory: 0 hrs

Practical: 390 hrs

Course Description

Clinical Practice –II is a 390 hours (10 weeks/ 60 working days) hospital based program that aims to provide students an opportunity for meaningful career related experiences by working fulltime in real hospital settings where they can practice on ocular anesthesia and manage pre-operative/ post operative patients of ocular surgery. Students can also expand upon their classroom based knowledge and skills before graduating by assisting in the different ocular surgery. At the end of this practical session students will be demonstrate preparation processing setting and autoclaving different ocular surgery instruments, linen etc.

The student will be eligible for Clinical Practice-II only after the completion of all classes of the subjects included in the curriculum. Clinical Practice-II should be completed at least 2 weeks before the start of 3rd year final examination of CTEVT. The institute will make arrangement for Clinical Practice-II. The institute will inform the CTEVT at least one month prior to the Clinical Practice-II placement date along with plan, schedule, the name of the students and their corresponding Clinical Practice-II site.

Activities

1. Ocular procedure (Ocular anesthesia)- 90 hrs

1.1 Topical anesthesia

- Preparation of medicines and patient
- Explain the procedure of anesthesia
- Instillation of anesthetic drop/ointment
- Management of complication

Local anesthesia (50 cases)

1.2 Retrobulbar anesthesia

- Preparation of medicines and patient
- Explain the procedure of retrobulbar anesthesia
- Administer the retrobulbar injection
- Management of complication

1.3 Peribulbar anesthesia

- Preparation of medicines and patient
- Explain the procedure of peribulbar anesthesia

- Administer the peribulbar anesthesia
- Management of complication

1.4 Infiltrative anesthesia.

- Preparation of medicines and patient
- Explain the procedure of infiltrative anesthesia
- Administer the infiltrative anesthesia
- Management of complication

1.5 General Anesthesia

1.6 Introduction GA

Basic knowledge of different equipments

2. Assist in the surgery- 200 hrs

2.1 Preparation yourself and patients

2.2 Preparation trolley

2.3 Arrange the instruments and consumables

2.4 Set up machine if required

2.5 Assist to Surgeon

Minimum number should be assist in various ocular surgeries:

- Cataract surgery (30 cases)
- Glaucoma Surgery (5 cases)
- Nasolacrimal duct passage surgery (10 cases)
- Squint surgery (5 cases)
- Keratoplasty (3 cases)
- Vitrectomy (3 cases)
- Retinal detachment (2 cases)
- Ptosis and reconstruction (2 cases)
- Orbitotomy (2 cases)
- Enucleation (2 cases)
- Evisceration /Exenteration (1 case)
- Excision biopsy (2 cases)
- Epilation (2 cases)
- Pterygium (5 cases)

3. Pre- operative and post operative management- 60 hrs

3.1 Pre -operative management

- Prepare patients according to surgical procedure
- Explain the surgical procedure
- Counseling the patients
- Review the check list
- Take legal consent
- Pre-operative teaching
- Physical preparation including parts of eye

3.2 Post-operative management

- Safely received patient from OT
- Immediate recovery care to the patient
- Start medicine according to order
- Explain post-operative instruction
- Close observation of operation site
- Discharge patients

4. Sterilization- 40 hrs

At the end of this practical session students will be demonstrate preparation processing setting and autoclaving different ocular surgery instruments, linen etc.

- preparation of instruments, linen, utilities
- processing of instruments
- setting instruments according to ocular surgeries
- Autoclaving the instruments (Steam/electric/gas)
- storage and delivery of sterile instruments

Evaluation

Attendance and quality of participation	25%
Case reports (numbers and qualities)	30%
Clinical live skill demonstration: In any 3 given areas	45%
Total:	100%

Clinical Practice –III

(Community Based)

(Diagnosis and screening camp, surgical camp, school screening, and district/Community/primary eye care centers/ Hospital)

Total: 312 hrs

Theory: 0 hrs

Practical: 312 hrs

Course description

Clinical Practice –III is a 312 hours (8 weeks/ 48 working days) community based program that aims to provide students an opportunity for meaningful career related experiences by working fulltime in real holistic approach. It deals with managing patient having eye problem in the eye centre and mobile community outreach program, including examination, investigation, counseling and explanation of treatment procedure.

The student will be eligible for Clinical Practice-III only after the completion of all classes of the subjects included in the curriculum. Clinical Practice-III should be completed at least 2 weeks before the start of 3rd year final examination of CTEVT. The institute will make arrangement for Clinical Practice-III. The institute will inform the CTEVT at least one month prior to the Clinical Practice-III placement date along with plan, schedule, the name of the students and their corresponding Clinical Practice-III site.

Activities

Unit 1: Observe and perform the job with or without supervision in Outpatient Clinic: 72 hrs

- Registration and reporting
- Visual acuity test and Refraction
- Eye Examination and Treatment
- Procedure room
- Imparting Health Education
- Maintain Referral Procedure for further treatment

Unit 2: Observe and perform the job under with or without supervision in Ocular investigations department: 40 hrs

- Intra-Ocular Pressure Measurement
- Lacrimal Syringing Test
- Corneal Flurescein strip test
- Schirmer Test
- Color Vision
- Ophthalmoscopy (Direct and Indirect)
- Biometry
- Visual field examination

- Ophthalmic Photography

Unit 3: Observe and perform other support service: 40 hrs

- Counseling
- Spectacle dispensing (edging, fitting)
- Pharmacy (Medical dispensing)
- Maintain Medical and non-medical supplies (Inventory and logistics Management)

Unit 4: Observe and perform the job under supervision in various department of In-patient Department: 60 hrs

- Admission of patient
- Consent perform preparation
- Prepare patient for surgery
- Check required investigation and preoperative management
- Postoperative management
- Patient discharge
- Recording

Unit 5: Observe and perform the job under supervision in various department of Operating Theatre: 60 hrs

- OT running and record keeping
- Receive the patient in OT and check the patient readiness for surgery
- Preoperative management in OT
- Local Anaesthesia (Topical and Injections)
- Assist unscrub and scrub (Sterile)
- Instrumentation and sterilization
- Operate OT equipment
- Perform extra ocular minor surgeries
- Pad and bandage
- Recovery of the patient
- Immediate postoperative management
- OT fumigation and preparation
- Maintain OT record and prepare periodical report

Unit 6: Observe and perform the job under supervision in various management activities of Outreach Community Eye Program: 40 hrs

- Describe Supervision, Monitoring and Evaluation of community eye health program
- Instrument/Equipment Maintenance
- Meeting and Minutes with stakeholders
- Prepare periodic report of the activities
- Maintain Communication with community base organizations
- Maintain a safe and healthy environment

DST (Diagnostic, Screening and treatment) Camps:
Surgical Eye Camps:
School Children Screening Program:
District/Community/primary eye care centers:

Evaluation

Attendance and quality of participation	25%
Case reports (numbers and qualities)	30%
Clinical live skill demonstration: In any 3 given areas	45%
Total:	100%