YENEPOYA UNIVERSITY

Deralakatte, Mangalore - 575018

REGULATIONS AND CURRICULUM GOVERNING

POSTGRADUATE PROGRAM (MS) IN

OPHTHALMOLOGY

(CURRICULUM - EFFECTIVE FROM 2010-11)

ATTESTED

Dr.Gangadhara Somayaji K.S.
Registrar
Yenepoya(Deemed to be University)
University Road, Deralakatte
Mangalore-575 018, Karnataka

YENEPOYA
UNIVERSITY

Recognised under Sec. 3(A) of the UGC Act 1956 as per notification number F.9-11/2007.U.3(A) dated 27-02-2008

No.YU/REG/AC-5(8)/RA1/Noti./2010 dt.16.10.2010

NOTIFICATION

Sub: Curriculum and Syllabus governing the Postgraduate Course in eight specialities

Ref: Proceedings of the meetings of the Academic Council and Board of Management held on 11th and 12th October 2010

****

The proposed curriculum and the syllabus governing the Postgraduate Course in the Specialities of MS General Surgery, MS Ophthalmology, MS Otorhinolaryngology, MD Pediatrics, MD General Medicine, MD Radio Diagnosis, MD Pulmonary Medicine, MD Obstetrics & Gynaecology as approved by the Academic Council and Board of Management in the meetings held on 11th and 12th October 2010 respectively are here-by notified for implementation.

REGISTRAR

To:

The Principal
Yenepoya Medical College

Copy to:

- Prof. & HODs. of MS General Surgery/MS Ophthalmology/ MS Otorhinolaryngology/ MD Pediatrics/ MD General Medicine/ MD Radio Diagnosis/ MD Pulmonary Medicine/ MD Obstetrics & Gynaecology
- The Controller of Examinations
- Notification file – Academic Section

University Road, Deralakatte, Mangalore - 575 018
+91 824 220 4676 / 4668 / 4669 / 4671 / 2192 / 2193 : +91 824 220 4667 reachus@yenepoya.org

MS **OPHTHALMOLOGY – SYLLABUS**

Goals and Objectives of the course

Goal

The Master's Course in Ophthalmology is a 3 year integrated course, after satisfactory completion of which, the candidate shall be able to practice Ophthalmology in the community that he/she serves.

Objectives

On completion of the course, the candidate shall be able to:

a. Offer to the community, the current quality of 'standard of care' in ophthalmic diagnosis as well as therapeutics, medical and surgical management, for common as well as referred conditions.
b. Periodically self-assess his or her performance and keep abreast with ongoing advances in the field and apply the same in his/her practice.
c. Know of his/her own limitations in the application of the specialty to situations which warrant referral to specialized centers.
d. Contribute as an individual or in a group or institution towards the fulfillment of the national objectives with regard to prevention of blindness.
e. Apply research and epidemiological methods to his/her practice.
f. Present or publish work done by him/her to the scientific community.
g. Effectively communicate with patients or relatives so as to educate them sufficiently and give them the full benefit of informed consent on treatment and ensure compliance.
h. Effectively communicate with colleagues

Rules and regulations governing the course

The post-graduate (PG) students undergo training in accordance with Yenepoya University regulations, which are as per MCI Guidelines.

Syllabus

The key areas in which the Postgraduate student will be trained and assessed, and is expected to achieve competencies, are:-

I. Patient Care
II. Medical Knowledge
III. Practice-based Learning & Improvement
IV. Interpersonal and Communication Skills
V. Professionalism
VI. Systems-Based Practice

I. Patient Care

Postgraduate students must be able to provide patient care that is compassionate, appropriate, and effective in the treatment of health problems and the promotion of health.

Postgraduate students are expected to:

1. Communicate effectively and demonstrate caring and respectful behaviour when interacting with patients and their families
2. Gather essential and accurate information about their patients
3. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences, up-to-date scientific evidence and clinical judgment
4. Develop and carry out patient management plans
5. Counsel and educate patients and their families

6. Use information technology to support patient care decisions and patient education
7. Perform competently all medical and invasive procedures considered essential for practice
8. Provide health care services aimed at prevention of disease, or coordinating with other health care professionals, including those from other disciplines, to provide patient-focused care

II. Medical Knowledge

1. This includes knowledge about established and evolving biomedical, clinical and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.
2. Investigatory and analytic thinking approach to clinical situations
3. Knowledge and application of the basic and clinically supportive sciences which are appropriate to their discipline

III. Practice-based Learning & Improvement

1. Investigate and evaluate patient care practices; appraise and assimilate scientific evidence; and improve patient care practices.
2. Analyze practice experience and perform practice-based improvement activities using a systematic methodology.
3. Locate, appraise, and assimilate evidence from scientific studies related to patients' health problems.
4. Obtain and use information about the practitioner's own population of patients and the larger population from which their patients are drawn.

5. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
6. Use information technology to manage information and access on-line medical information.
7. Facilitate the learning of students and other health care professionals.

IV. Interpersonal and Communication Skills

Competent interpersonal and communication skills result in effective information exchange and teaming with patients, their families, and professional associates. To this effect, postgraduate students should:

1. Create and sustain a therapeutic and ethically sound relationship with patients.
2. Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.
3. Work effectively with others as a member or leader of a health care team or other professional group

V. Professionalism

A postgraduate in the discipline of Ophthalmology should

1. Be committed to carrying out professional responsibilities.
2. practice compassion and integrity
3. Responsive to the needs of patients and society that should supersede self-interest
4. Be ccountable to patients, society, and the profession
5. Be committed to excellence and on-going professional development.
6. Be sensitive to a diverse patient population; and responsive to patients' culture, age, gender, and disabilities.

7. Be committed to ethical principles pertaining to providing or withholding clinical care, confidentiality of patient information, informed consent, and business practices.

VI. Systems-Based Practice

It is necessary to have an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

To this end, the postgraduate student should:

1) Understand how their patient care and other professional practices affect other health care professionals, the health care organization, and the larger society and how these elements of the system affect their own practice
2) Know how types of medical practice and delivery systems differ from one another, including methods of controlling health care costs and allocating resources
3) Practice cost-effective health care and resource allocation that does not compromise quality of care
4) Advocate for quality patient care and assist patients in dealing with system complexities

Know how to partner with health care managers and health care providers to assess, coordinate, and improve health care and know how these activities can affect system performances

4. Course Content

A. Essential theoretical knowledge

These are only broad guidelines and are illustrative. There may be overlap between sections

1	The basic sciences	
1.1	Anatomy	Gross anatomy, Histology, Embryology of

		Eye Ocular adnexa Orbit Cranial nerves Neuro anatomy related to eye
1.2	Physiology	Physiology of the eye Physiology of vision
1.3	Biochemistry	General biochemistry Biochemistry applicable to ocular function
1.4	Pathology	General pathology Ocular pathology Gross pathology Histopathology
1.5	Microbiology	General Microbiology Specific Microbiology applicable to the eye Immunology with particular reference to ocular immunology
1.6	Optics	Geometric and optics Basic physical and physiological optics Ophthalmic optics Applied optics including optical devices
1.7	Pharmacology	Ocular Pharmacology
1.8	Genetics	Genetics in Ophthalmology Gene therapy Genetic counseling
1.9	Molecular biology	Proteomics
2	Clinical Ophthalmology	

2.1	Disorders of Refraction
2.2	Disorders of the eyelids
2.3	Disorders of the Lacrimal system
2.4	Disorders of the Conjunctiva
2.5	Disorders of the Sclera
2.6	Disorders of the Cornea
2.7	Disorders of the Uveal Tract
2.8	Disorders of the Lens
2.9	Disorders of the Retina & Vitreous
2.10	Disorders of the Optic Nerve & Visual Pathway
2.11	Disorders of the Orbit
2.12	Occuloplasty
2.13	Glaucoma
2.14	Neurophthalmology
2.15	Paediatric ophthalmology
2.16	Systemic Ophthalmology (Ocular involvement in systemic disease)
2.17	Immune ocular disorders
2.18	Disorders of ocular motility & Amblyopia
2.19	Trauma & Emergency – Ocular & Orbital
3	Investigative Ophthalmology
4	Community Ophthalmology
5	Eye Banking
6	Recent advances in Ophthalmology
7	Eye (Ocular involvement) in tropical diseases
8	Stem cell therapy

B. Essential Diagnostic Skills and Instrumentation

1	Refraction	Priestly smith Retinoscopy Streak Retinoscopy Use of Jackson's cross – cylinder Subjective and objective correction Spectacle prescription Contact lens prescription and fitting Autorefractometry
2	Slit Lamp techniques	Diffuse examination Focal examination Retro illumination – direct & indirect Sclerotic reflection Staining modalities and interpretation
3	Slit lamp techniques with accessories	Gonioscopy using Gonioprism -4 mirror indentation Gonioscopy Examination of the fundus using 78D 90D 3 mirror Gonioprism Slit lamp photography Clinical meibography Examination with vital dyes Fluorescein Rose Bengal Lissamine

4	Tonometry	Applanation Indentation
5	Ophthalmoscopy	Direct Indirect Contact and non-contact lens
6	Ophthalmic sampling techiniques	Corneal scraping FNAC Conjunctival cytology (Impression and Brush) Paracentesis AC and Vitreous taps
7	Ophthalmic imaging techniques	Orbscan FFA OCT (Anterior & Posterior) BScan UBM Specular microscopy
8	Color vision	Ishihara pseudoisochromatic plates Farnsworth – Munsell D15 hue test
9	Perimetry	Amsler's charting Arc perimeter &Tangent screen - Historic value Goldman perimeter Static computerized Perimetry (HFA)
10	Investigations related to cornea	Keratometry Pachymetry Corneal topography
11	Fundus imaging	Fundus photography

		Fundus Fluorescein Angiography Indocyanine green angiography
13	Exophthalmometry	Hertel's exophthalmometer Luedde's exophthalmometer
14	Low vision aids	The basics of fitting with knowledge of availability & cost
15	Radiology	Plain skull films Radiological localisation of intra ocular and intra orbital foreign bodies Contrast studies Dacryocystography CT – Scans MRI Scans Doppler studies of ocular and orbital vasculature

C. Essential Surgical skills

	Procedures	Nature of activity * & number			
		O	A	PA	PI
A	Operating theatre				
1	Anaesthesia				
	Peribulbar anaesthesia	-	-	20	20
	Sub-Tenon's anaesthesia		-	-	-
	Intra-cameral anesthesia				
	Facial blocks				
	O ' Brein	-	-	-	Theoretical knowledge
	Atkinson	-	-	-	
	Van Lint & modifications	-	-	-	

	Blocks for lacrimal sac surgery	-	-	-	5
2	Lid surgery :				
	Tarsorrhaphy	-	-	-	5
	Ectropion and entropion procedures	2	2	-	
	Ptosis surgery	2	2	-	-
	Lid repair following trauma	2	-	2	-
	Surgical excision lid for mass	2	-	2	-
	Epilation, electrolysis, cryotherapy etc.	-	-	-	10
3	Destructive procedures:				
	Evisceration with or without implant	-	-	-	1
	Enucleation with or without implant	-	-	-	5
	Modified enucleation procedures for intraocular tumours	1	-		-
4	Lacrimal Sac surgery				
	Dacrocystectomy	-	-	-	2
	Dacryocystorhinostomy	-	-	2	
	Probing for congenital obstruction of nasolacrimal duct	-	1	1	-
	Endonasal & endocanalicular laser DCRs	1			
	Other forms of lacrimal surgery like conjunctivo-rhinostomy, canaliculo-dacryocystorhinostomy	1			
5	Extraocular muscle surgery				

	Recession and resection procedures on the horizontal recti	-	2	-	-
	Procedures on vertical extraocular muscles		1		
6	Cataract surgery				
	Small incision ECCE with or without IOL implantation		20	10	10
	Secondary AC or PC IOL implantation		5		
	Phacoemulsification	20	10		
	Phakic IOLs	2			
	Pediatric cataract surgeries	2			
7	Retinal surgery				
	Sclera buckling	-	1	-	-
	Prophylactic cryotherapy		1	-	-
8	Orbital surgery				
	Anterior orbitotomy for diagnostics and therapy	1	-	-	-
	Lateral orbitotomy for tumours	1	-	-	-
	Incision and drainage via anterior orbitotomy for abscess	1		-	-
	Exenteration	1	-	-	-
	Fine needle aspiration biopsy of orbital disease	1	-	-	-
	Maxillofacial surgeries with orbital involvement	1	-	-	-
9	Vitrectomy				
	Intra vitreal and intra cameral (anterior chamber) injection techniques and dosages, particularly for endophthalmitis management	5	5	5	3

	Open sky vitrectomy (anterior segment) as management of cataract surgery complication	-	-	-	2
	Vitrectomy	5	2		
10	Corneal surgeries				
	Penetrating keratoplasty (therapeutic, optical)	1	-		-
	Lamellar Keratoplasty (External posting E/P)	1	-	-	-
	Femtosecond laser refractive surgeries -SMILE E/P	1			
	FLECK E/P	1			
	Conductive Keratoplasty E/P	1			
	Use of tissue glues	1			
	Corneal cross linking E/P	1			
11	Glaucoma surgery				
	Trabeculectomy	5	3	-	
	Trabeculotomy	1			
	Augmented trabeculectomy	2	2		
	Cyclocryotherapy and other cyclo-destructive procedures	1	-	-	
12	Surface ocular procedures				
	Pterygium excision conjunctival autograft	-	-	-	5
	Biopsy of conjunctiva	-	-	3	
	Wide excision of ocular –surface tumors with reconstruction of ocular surface	1	1		
13	Oculoplasty and oculo-facial rejuvenation	2	-	-	

	Botox injections (E/P)				
B.	OUTPATIENT :				
1	Manual diagnostic procedures such as syringing, corneal scraping, conjunctival swab collection,.etc.	-	-	-	10 each
2	Conjunctival and corneal foreign body removal on the slit lamp	-	-	-	10
3	Chalazion incision and curettage	-	-	-	10
4	Excision biopsy of small lid Tumors	-	-	2	-
5	Suture removal skin, Conjunctival, corneal, and corneoscleral	-	-	-	5
6	Subconjunctival injection	10	-	-	10
7	Posterior Sub – Tenon's injections	2	-	2	
8	Laser posterior capsulotomy	10	-	-	2
9	Laser iridotomy	5	-	-	2
10	Laser trabeculoplasty		-	-	-
11	Panretinal photocoagulation	20	-	-	-
12	Focal photocoagulation	10	-	-	-
13	Refractive laser surgeries (In external posting- LASIK)	5	-	-	-

*The procedures that the student should have:
O = Washed and Observed
A = Assisted the operating surgeon
PA = Performed with Assistance
PI = Performed Independently

D. Essential Research Skills

At the end of three year course, the post graduate should develop the following skills:

1. Ability to undertake clinical & basic research
2. Basic statistical knowledge
3. Descriptive and Inferential statistics
4. Ability to publish results of one's work
5. Ability to constructively evaluate scientific publications
6. Understanding of bioethical issues

E. Other skills required

I. Community Ophthalmology

Ability to assist in community screening
Ability to assist organizing peripheral eye screening camps
Knowledge and ability to execute guidelines of National Program for Prevention of Blindness and visual impairment

II. Scientific Presentations

Ability to present one's work effectively at various scientific conferences within allotted framework of time

III. Organization

Ability to assist in organizing meetings, seminars and symposia

IV. Communication skills

Ability to get along with colleagues and work as a team with the other members of the department

Ability to interact with and work as a team with other disciplines that may exist in the same hospital.

Ability to counsel and communicate with patients and relatives

V. Record keeping and Documentation

The ability to maintain records scientifically

Knowledge of information technology and computer software and usage (BACKBONE)

Knowledge of ICD-10 (International classification of diseases-10)

Knowledge of Insurance coverage and billing

VI. Teaching

The ability to pass on skills acquired to one's juniors, which includes theoretical, procedural and surgical skills. The suggested interactive lecture topics are as follows.

S.No	**TOPIC**	
FIRST 6 MONTH		**NEXT 6 MONTH**

1.	Sac Syringing	Perimetry
2.	Tonometry	Indirect Ophthalmoscopy
3.	Retinoscopy	Nd:YAG laser
4.	Gonioscopy	Retinal Laser
5.	Pachymetry	Synoptophore
6.	Keratometry	B-Scan
7.	Slit lamp examination	UBM

Training methodology

Training is to be imparted in a phased and structured manner as it permits systematic monitoring of the student's progress and also allows for timely revision and innovative changes to be introduced in the training protocols.

Training will be done by a combination of methods viz. bedside clinics ,demonstrations, seminars, clinical case presentations, Journal Clubs, surgical wet labs, etc

The training will start with an orientation or 'Bridge' course of 8-10 weeks duration.

Bridge Course Or Orientation

The candidate will use this period to refresh his/her knowledge of ophthalmology as prescribed for undergraduates. Similarly he is required to refresh his knowledge in anatomy, physiology, biochemistry, microbiology and pathology as relevant to Ophthalmology

Interdepartmental Integrated teaching

Post graduate students should attend integrated teaching programme in the form of case presentations, seminars with other specialties like Paediatrics, ENT, Surgery, Radiology, Medicine.

Demonstration of clinical skills

Demonstration of various procedures like retinoscopy, Ophthalmoscopy, Fluoroscein angiography, squint evaluation, slit lamp examination with accessories such as gonioscopy etc.

Clinical Case discussions

Case discussions on the patient's records written by the student is to be encouraged as it helps exercise the student's diagnostics and decision making skills.

Case presentation at other multidisciplinary hospital forum may be done.

Case presentations are mandatory at forum such as regional and national conferences.

Seminars

Seminars will be conducted at least once weekly. The topics selected may be repeated once in 2 years so as to cover as wide a range of topics as possible.

Seminars could be individual presentations or a continuum (large topics) with many candidates participating.

Each candidate shall present at least four seminars a year and a total of 12 seminars in 3 years, with appropriate use of Audio-visual aids / demonstrations.

Journal Clubs

Journal club presentation should consist of an original research paper and presenting a review paper. Each of the above will be held once every month.

The journal club will be 'resident led' by a final year candidate, under the guidance of a teaching faculty member. The aim of the journal club will be to enable a student to critically assess any study and its applicability to his clientele.

Each candidate shall make a presentation at least four times in a year and a total of 12 such presentations be made in 3 years.

Special clinics

Each student will be posted on monthly rotations to the various subspecialty clinics like Retina, Glaucoma, Cornea and Neuro –ophthal.

Imparting of diagnostic and surgical skills

This will be done preferably through the use of simulators in a diagnostic / surgical wet lab, before the candidate proceeds to performing the same on patients

To bring about a structured learning programme, the Dreyfus model is adopted. Skills are learnt in distinct stages and progress at each stage can be assessed.

There are 4 stages:

1. Novice
2. Beginner
3. Advanced beginner
4. Proficient

Training methodologies Students will train not only through wet lab programmes but also by viewing faculty produced videos e.g.

1. Typical preparation and draping procedure

2. Typical first case
3. What is on the tray and how are the instruments set up
4. Setting up of the phacoemulsification machine
5. Examples of good CCC
6. Examples of consent

Surgical competencies

The requirements and surgical competencies at each stage are defined as under:-

Sr No.	Stage of training	Competency level	Remarks
1	Novice	Needs only the desire to learn	First year post graduate student
2	Beginner	Know name/purpose of all instruments in cataract tray	First year PG undergoing wet lab training
		Describe all steps of cataract surgery	
		Describe common complications of cataract surgery	
		Demonstrate ability to fold and insert IOL into capsular bag	
		Demonstrate ability to prep and drape eye	
		Demonstrate ability to use operating microscope	
		Demonstrate ability to place a single suture	
		Demonstrate ability to remove viscoelastic device (OVD)	
		Demonstrate ability to perform YAG capsulotomy	
		Manage routine cataract patients postoperatively	
		Describe findings of CME on OCT and FFA	
		Describe common complications of YAG capsulotomy	

		Demonstrate ability to remove cortical lens material	In exceptional cases
		Demonstrate ability to use phacoemulsification handpiece	
3	Advanced beginner	Capable of doing an entire cataract case on his own in approximately 45 mts and without use of the non dominant hand	Second year student
		Know name/purpose of all instruments on all eye trays	
		Consent patient for routine cataract surgery	
		Perform 5 uncomplicated phacoemulsification cases using 1 hand < 45min	
		Describe steps to convert to ECCE	
		Describe technique of anterior vitrectomy	
		Demonstrate ability to perform A scan for AEL	
		Demonstrate ability to place multiple sutures efficiently	
		Demonstrate ability to use capsular dye	
		Demonstrate ability to use both hands during surgery	In exceptional cases
		Understand phacoemulsification settings	
		Demonstrate ability to do 2 handed cases < 30 minutes	
		Demonstrate ability to use iris hooks/iris stretch techniques	
4	Proficient	Can complete a cataract surgery within 30 mts using both hands	A 3rd yr PG
		Understand IOL selection	
		Obtain consent from patient for complex cataract surgery (eg CTR, capsular dye)	

		Perform 5 uncomplicated phaco's w/ both hands < 30min	
		Demonstrate or deeply understand conversion to ECCE	
		Demonstrate or deeply understand anterior vitrectomy	
		Demonstrate or understand sulcus IOL placement	
		Understand phacoemulsification machine settings	
		Understand OVD selection	
		Demonstrate ability to use iris hooks	
		Demonstrate ability to use McCannell suture	**In exceptional cases**
		Demonstrate ability to use CTR	
		Demonstrate ability to do 2 handed cases < 15 minutes	
		Demonstrate ability to use phacoemulsification chop techniques	
		Supervise First year students during portions of cataract surgery	

Conferences and workshops

As per the Yenepoya University eligibility for a candidate to appear for MD/MS examination following criteria should be fulfilled.

Each candidate will have attended at least one national conference and 2 regional conferences / workshops during the training period of 3 years.

Each candidate should have made 2 scientific presentations (1posters/1papers) at the regional level and one publication in an indexed journal on an ophthalmology related topic during their 3 year training course.

External posting to other Institutions and Departments

In certain cases, when some specialized procedures are not being performed.(eg. Lamellar Keratoplasty Corneal) The total duration of external postings should not exceed 30 days.

Dissertation:

Every candidate pursuing MS degree course in ophthalmology is required to carry out work on a selected research project under the guidance of recognized postgraduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study complying with internationally accepted bio-ethical standards, collection of data, critical analysis and comparison of results and drawing conclusions.

Every candidate shall submit to the University, in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course on or before the dates notified by the University. The synopsis shall be sent through the proper channel.

Such synopsis will be reviewed and approved by the board of studies before forwarding to the scientific review board and finally to the ethics committee of the university. The dissertation topic will be registered by the University. No changes in the dissertation topic or guide shall be made without prior approval of the University.

The dissertation should be written under the following headings:

i. Introduction
ii. Aims or Objectives of study
iii. Review of Literature
iv. Material and Methods
v. Results
vi. Discussion
vii. Conclusion
viii. Summary
ix. References
x. Tables
xi. Annexure

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other Checklists. It should be neatly typed in double line spacing on one side of paper (A4 size; 8.27”x 11.69’’) and bound properly. Spiral binding is not acceptable. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Number of to be submitted to university as per university guidelines and it will be done six months before final examination on or before the dates notified by the University.

The dissertation shall be valued by reviewers selected by the University. Approval of dissertation work is an essential pre requisite for a candidate to appear in the University examination.

Guide: The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work shall be as per Medical Council of India Minimum Qualification for Teachers in medical Institutions regulations, 1998 with up to date amendments. Teachers in a Medical college / institution having a total of eight years teaching experience out of which at least five years teaching experience as Lecturer or Assistant Professor gained after obtaining postgraduate degree, shall be recognized as postgraduate teachers.

A Co – guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognized for teaching/ training by the University/Medical Council of India. The co – guide shall be a recognized postgraduate teacher.

Change of Guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the university.

Miscellaneous

Community outreach programmes.

Candidates will also participate in regular community outreach programmes as organized by the head of the institution or department

They will be encouraged to visit visual rehabilitation centres, mobility training centres for the blind, and schools for the blind to familiarize themselves with the societal dimension

Monitoring of Teaching / Learning activities

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also helps students evaluate themselves. The monitoring should be done by the staff of the department based on participation of students in various teaching/learning activities based on well established criteria assessment may be done using checklists that assess various aspects.

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide / teaching faculty. Feedback from patients may also be used as an evaluation tool regarding communication skills.

Various feedback and evaluation methods used are:

1. Log book

The log book is a record of the important activities of the candidates during his training. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidates.

The work diary shall be scrutinized and certified by the Head of the Unit and Head of the Department presented in the university practical / clinical examination.

The log book shall be record of Interesting OP and IP cases

1. Surgical procedures performed and assisted
2. Record of wet lab
3. Record of outreach programmes
4. Record of teaching programmes including UG classes
5. Record of External postings
6. Record of Scientific presentations
7. Synopsis of Dissertation

The log book is a record of the important activities of the candidates during his training. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidates.

The work diary shall be scrutinized and certified by the Head of the Unit and Head of the Department presented in the university practical / clinical examination.

The log book shall be record of Interesting OP and IP cases

a. Surgical procedures performed and assisted
b. Record of wet lab
c. Record of outreach programmes
d. Record of teaching programmes including UG classes
e. Record of External postings
f. Record of Scientific presentations
g. Synopsis of Dissertation

Port folio with reflections

a. Seminar
b. Case presentation
c. Tutorials

d. Journal club

e. UG Theory class

f. Surgical procedure

g. Evaluation of ward work

h. Patient feedback

Student Feedback on course (as per IQAC)

Student feedback on teaching faculty(as per IQAC)\

Scheme of examination:

INTERNAL ASSESSMENT

At the end of first year students theoretical knowledge will be assessed with the theory paper of 100 marks and clinical skills will be assessed by DOPS (100 marks)

At the end of 2nd year once again theoretical knowledge will be assessed with theory paper of 100 marks and clinical skills will be assessed by Mini Cx. (100 marks)

Paper wise topic distribution

Theory:

Each paper will be of a maximum of 100 marks

Paper I - Basic Sciences

- Anatomy of the eye and Orbit
- Ocular Physiology
- Ophthalmic Pathology
- Microbiology and Immunology
- Geometric and Ophthalmic optics
- Biochemistry relevant to ophthalmology
- Ocular pharmacology

Paper – II- Anterior segment and Adenexa

- Disorders of lids
- Disorders of the Orbit
- Disorders of Lacrimal system
- Disorders of refraction
- Disorders of conjunctiva
- Disorders of sclera
- Disorders of cornea

- Disorders of the lens

Paper III- Posterior segment, Neuro-ophthalmology, Squint, Glaucoma

- Glaucoma
- Disorders of the Uvea
- Disorders of the Retina
- Neuro Ophthalmology
- Strabismus and amblyopia

Paper – IV- Recent advances and others

- Systemic Ophthalmology
- Paediatric Ophthalmology
- Community Ophthalmology
- Bio – ethics
- Immune ocular disorders
- Recent advances in Ophthalmology

Each theory paper will comprise of 2 sections.

Section I will have two long essay types of questions of 20 marks each

Section II will have six short essay types of questions of 10 marks each

Each of the four papers will have equal weightage.

Aggregate Pass percentage is 50%

Individual paper pass percentage -40%

Practicals and theory will have equal weightage

Clinical Examination: 200 Marks

One long Case:

Duration: 45 minutes – 1 hour

Marks: 50 marks

Type of case:
Neuro-ophthalmology
Proptosis
Sclerokeratouveitis
Uveitis with Complications
Lens induced complications
Glaucoma
Ptosis
Strabismus

Short Cases:
Two short cases of 25 marks each.
Duration: 15 minutes each.

Fundus Cases:
Two fundus cases
Duration: 15 minutes each
Marks: 25 marks each
Type of cases:
Rhegmatogenous Retinal Detachment
Diabetic retinopathy, background & proliferative
Vasculitis
Tractional RD
Hypertensive Retinopathy & Combinations of the same with DR
Vascular Occlusion
Macular hole
High myopia with degeneration
Coloboma choroid, simple or with detachment
Posterior uveitis, Retinitis etc.
Pigmentary retinopathy
Optic atrophy

Refraction:
Two refraction cases of 25 mark each.
Time: 10 mins each

Viva voce: 100 Marks

Students will be examined by all the examiners together about students comprehension of the components of course contents, analytical approach & interpretation of data.

This section will carry 90 Marks.

The examination will include the following:

VIVA

1. Corneal topography
2. HFA analysis
3. Fundus photo and FFA
4. OCT
5. B Scan
6. CT/MRI
7. Pathology Specimen
8. Microbiology slides
9. Surgical instruments

10. Pharmocological drugs

Pedagogy Exercise: (10) Marks

A topic is given to each candidate before the Clinical examination. Each will make a Presentation on the topic for 8 -10 minutes.

University Question paper pattern and Marks distribution

Type of Question	Marks allotted	Number of questions	Marks
Long essay	20	02	40
Short essay	10	06	60
MCQ	00	00	0
Total	-	08	100

Theory	Practical	Viva	Grand Total
400	200	100	700

Recommended books

1. Adlers physiology of the eye : clinical application/ Paul I Kaufeman Albert Aln
2. Anatomy Wolff's/R Warwick
3. Fundus examination – Michelson
4. Manual of ocular diagnosis and therapy by Deborah Pavon-Langston
5. Duke –Elders practice of refraction/ by David Abrahams
6. Ophthalmology: Clinical signs and differential diagnosis/. Jack J Kanski
7. Parson's diseases of the eye/ Sihota and Tandon
8. Cataract surgery and its complications/ Norman S. K. Jaffe
9. Clinical ophthalmology a system approach/Jack J Kanski.-
10. Pediatric ophthalmology/ David Taylor
11. Pediatric Ophthalmology, Neuro-Ophthalmology Genetics/Lorenz
12. The Cornea: Scientific foundations & clinical practice./ by Gilbert Smolin & Ricahrd A Thoft
13. Ocular Therapeutics: Pharmacology & clinical application/Paul V Fechner & Klaus D Teichmann
14. Ophthalmology/Myron Yanoff
15. Ocular therapeutics : Pharmacology & clinical application/Paul UFechner
16. Essentials of ophthalmology- Pradeep Sharma
17. Essentials of ophthalmology/Lalith P Agarwal

18. Principles and practice of ophthalmology.-.Albert &Jakobeic 6 vols
19. Walsh & Hoyt's clinical Neurophthalmology Neil R Miller5 Vols
20. Practical orthoptics in the treatment of squint.T.Keith Lyle & Kenneth C Wybar
21. Squint / Gunter K Von Noorden
22. Uveitis: Fundamentals & clinical practice. Robert B Nussenblatt& Scott M Whitcup
23. Grayson's diseases of the cornea
24. Basic & Clinical science course : update on general medicine/American Academy of Ophthalmology/V:1 to V:13
25. Intraocular Tumors: and atlas and text book.-./Jerry A Shields