PRAVARA INSTITUTE OF MEDICAL SCIENCES
(DEEMED TO BE UNIVERSITY)
Loni, Tal. Rahata, Dist. Ahmednagar 413736
NAAC Re-accrediated with 'A' Grade

SYLLABUS
PG Programme- MS (OPHTHALMOLOGY)
(As per MCI Regulations Governing PG Programme 2000 Amended up to May, 2018)

I. PREAMBLE

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

The purpose of this programme is to standardize Ophthalmology teaching at post graduate level throughout the country so that it will benefit in achieving uniformity in post graduate and undergraduate teaching as well as result in creating competent ophthalmic surgeons with appropriate expertise.

The purpose of this document is to provide teachers and learners illustrative guidelines to achieve defined outcomes through learning and assessment. This document was prepared by various subject-content specialists. The Reconciliation Board of the Academic Committee has attempted to render uniformity without compromise to purpose and content of the document. Compromise in purity of syntax has been made in order to preserve the purpose and content. This has necessitated retention of "domains of learning" under the heading "competencies".

II. SUBJECT SPECIFIC LEARNING OBJECTIVES

Programme Objectives

The clinical post graduate training programmes are intended at developing in a student a blend of qualities that of a clinical specialist, a teacher and a researcher. These programmes are organized such that a post graduate student should possess the following qualities, knowledge and skills:

a. The student should possess basic knowledge of the structure, function and development of the human body as related to ophthalmology, of the factors which may disturb these mechanisms and the disorders of structure and function which may result thereafter.
b. The student should be able to practice and handle most day-to-day problems independently in ophthalmology. The student should recognize the limitations of his/her own clinical knowledge and know when to seek further help.
c. The student should understand the effects of environment on health and be familiar with the epidemiology of at least the more common diseases in the field of ophthalmology.
d. The student should be able to integrate the preventive methods with the curative and rehabilitative measures in the comprehensive management of the disease.

e. The student should be familiar with common eye problems occurring in rural areas and be able to deal with them effectively.
f. The student should also be made aware of Mobile Ophthalmic Unit and its working and components.
g. The student should be familiar with the current developments in Ophthalmic Sciences. Student should recognize the ocular health needs of the community and carry out professional obligations in keeping with the principles of National Health Policies.
h. The student should be able to plan educational programmes in Ophthalmology in association with senior colleagues and be familiar with the modern methods of teaching and evaluation.
i. The student should be able to identify a problem for research, plan a rational approach to its solution, execute it and critically evaluate his/her data in the light of existing knowledge. Student should have a spirit of scientific inquiry and should be oriented to the principles of research methodology.
j. The student should reach the conclusions by logical deduction and should be able to assess evidence both as to its reliability and its relevance.
k. The student should have basic knowledge of medico-legal aspects of medicine.
l. The student should be familiar with patient counseling and proper consent taking.
m. Student should have mastered most of the competencies pertaining to Ophthalmology that are required to be practiced ethically.
n. Student should be aware of the advances and recent developments in Ophthalmology.
o. Student should have acquired skills in educating medical and paramedical professionals.

III. SUBJECT SPECIFIC COMPETENCIES

A post graduate student upon successfully qualifying in the M.S. (Ophthalmology) examination should be able to:

a) Offer to the community, the current quality of 'standard of care' in ophthalmic diagnosis as well as therapeutics, medical or surgical, in most of the common situations encountered at the level of health services.
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) Be aware of her/his own limitations to the application of the specialty in situations, which warrant referral to more qualified centers or individuals.
d) Apply research and epidemiological methods during his/her practice. The post graduate student should be able to present or publish work done by him/her.
e) Contribute as an individual/group towards the fulfillment of national objectives with regard to prevention of blindness.
f) Effectively communicate with patients or relatives so as to educate them sufficiently and give them the full benefit of informed consent to treatment and ensure compliance.

At the end of the course, the student should have acquired knowledge in the following:

A. Cognitive Domain

Basic Medical Sciences:

- Attain understanding of the structure and function of the eye and its parts in health and disease.
- Attain understanding and application of knowledge of the structure and function of the parts of Central Nervous System and other parts of the body with influence or control on the structure and function of the eye.
- Attain understanding of and develop competence in executing common general laboratory procedures employed in diagnosis and research in Ophthalmology.

1. Clinical Ophthalmology:

Given adequate opportunity to work on the basis of graded responsibilities in outpatients, inpatient and operation theatres on a rational basis in the clinical sections from the day of entry to the completion of the training programme, the students should be able to:

- Acquire scientific and rational approach to the diagnosis of ophthalmic cases presented. To take detailed history, perform complete physical examination including anterior and posterior segment of the eye and to diagnose and manage majority of the conditions in Ophthalmology on the basis of clinical assessment and appropriate investigations.
- Acquire understanding of and develop inquisitiveness to investigate to establish cause and effect of the disease.
- To manage and treat all types of ophthalmic cases.
- To competently handle and execute safely all routine surgical procedures on lens, glaucoma, lid, sac, adnexa, retina and muscle anomalies.
- To competently handle all ophthalmic medical and surgical emergencies.
- To be familiar with micro-surgery and special surgical techniques.
- To demonstrate the knowledge of the pharmacological (including toxic) aspects of drugs used in ophthalmic practice and drugs commonly used in general diseases affecting the eyes.
- To demonstrate skills in documentation of individual case details.
- To develop skills as a self directed learner and to recognize continuing education needs.
- To demonstrate empathy and human approach towards patients and their families.

2. Refraction:

- Acquire competence in assessment of refractive errors and prescription of glasses for all types of refraction problems.
- Acquire basic knowledge of manufacture and fitting of glasses and competence of judging the accuracy and defects of the dispensed glasses.

3. Ophthalmic super-specialties:

Given an opportunity to work on a rotational basis in various special clinics of sub-specialties of ophthalmology, if possible, the student should be able to:

Examine, diagnose and demonstrate understanding of management of the problems of neuro-ophthalmology and refer appropriate cases to neurology and neuro-surgery.

Examine, diagnose and demonstrate understanding of management of (medical and surgical) complicated problems in the field of (a) lens, (b) glaucoma, c) cornea, (d) retina, (e) pediatric ophthalmology, (f) oculoplasty, (g) uvea, and (I) genetic problems in ophthalmology.

To demonstrate understanding of the manufacture, and competence in prescription and dispensing of contact lenses and ocular prosthesis.

4. Ophthalmic pathological/microbiological/biochemical sciences

- Be able to interpret the diagnosis in correlation with the clinical data and routine materials received in such cases.

5. Community and Preventive Ophthalmology

- Eye camps: Eye camps may be conducted where the PG students are posted for imparting training to according to a set methodology. The community and school surveys may also be conducted by the post graduate students.The post graduate students are given an opportunity to participate in surveys, eye camps.
- Eye Banking: PG student should be able to perform enucleation & assist transplant Surgeries. He should be familiar with SOP of the eye banking.

6. Research :

- Recognise a research problem.
- State the objectives in terms of what is expected to be achieved in the end.
- Plan a rational approach with appropriate controls with full awareness of the statistical validity of the size of the material.
- Spell out the methodology and carry out most of the technical procedures required for the study.
- Accurately and objectively record on systematic lines results and observation made.
- Analyze the data with the aid of an appropriate statistical analysis.
- Interpret the observations in the light of existing knowledge and highlight in what ways the study has advanced existing knowledge on the subject and what further remains to be done.
- Write a thesis in accordance with the prescribed instructions.
- Write at least one scientific paper as expected of International Standards from the material of this thesis.

B. Affective Domain:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to

respect the rights of the patient including the right to information and second opinion.

3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor Domain

At the end of the course, the student should acquire following clinical skills:

Essential diagnostic skills:

I. Examination techniques along with interpretation

1. Slit lamp Examination

i. Diffuse examination
ii. Focal examination
iii. Retroillumination – direct and indirect
iv. Sclerotic scatter
v. Specular reflection
vi. Staining modalities and interpretation

2. Fundus evaluation

- Direct/Indirect ophthamoscopy
- Fundus drawing
- 3-mirror examination of the fundus
- 78-D/90-D/60-D examination
- Amsler's charting

II. Basic investigations along with their interpretation

1. Tonometry

Tonometry - Applanation/Identation/Non-contact

2. Gonioscopy

Gonioscopy grading of the anterior chamber angle

3. Tear/ Lacrimal function tests

i. Staining- fluorescein and Rose Bengal
ii. Schirmer test/tear film break up time
iii. Syringing
iv. Dacrocystography

4. Corneal

- Corneal scraping and cauterization
- Smear preparation and interpretation (Gram's stain /KOH)
- Media inoculation
- Keratometry - performance and interpretation
- Pachymetry
- Corneal topography - if available

5. Colour Vision evaluation

- Ishihara pseudoisochromatic plates
- Farnsworth Munsell, if available

6. Refraction

i. Retinoscopy- Streak/ Priestley Smith
ii. Use of Jackson's cross-cylinder
iii. Subjective and objective refraction
iv. Prescription of glasses

7. Diagnosis and assessment of Squint

i. Ocular position and motility examination
ii. Synoptophore usage
iii. Diplopia charting
iv. Assessment of strabismus - cover tests/prisms bars
v. Amblyopia diagnosis and treatment
vi. Assessment of convergence, accommodation, stereopsis, suppression

8. Exophthalmometry

Usage of Hertel's exophthalmometer - proptosis measurement

9. Contact lenses

- Fitting and assessment of RGP and soft lenses
- Complications arising of contact lens use
- Educating the patient regarding CL usage and imparting relevant knowledge of the complications arising thereon

10. Low Vision Aids

- Knowledge of basic optical devices available and relative advantages and disadvantages of each.
- The basics of fitting with knowledge of availability & cost

III. The post graduate must be well versed with the following investigative modalities although the student may or may not perform it individually. But, she/he should be able to interpret results of the following tests:

1. Fundus photography
2. Fluorescein angiography
3. Ophthalmic ultrasound A-scan/B scan
4. Automated perimetry for glaucoma and neurological lesions
5. Radiological tests - X rays - Antero posterior/ Lateral view PNS (Water's view) / Optic canal views
   Localisation of intra-ocular and intra-orbital FBs
   Interpretations of -USG/ CT/ MRI Scans
6. OCT and UBM if available
7. ERG, EOG, and VEP if available

IV. Minor surgical procedures – Must know and perform independently

- Conjunctival and corneal foreign body removal on the slit lamp
- Chalazion incision and curettage
- Pterygium excision
- Biopsy of small lid tumours

- Suture removal- skin/conjunctival/corneal/ corneoscleral
- Tarsorrhaphy
- Subconjunctival injection
- Retrobulbar, parabulbar anaesthesia
- Posterior Sub-Tenon's injections
- Artificial eye fitting

V. Surgical procedures

1. Must know and can perform independently a. Ocular anaesthesia:
   - Retrobulbar anaesthesia
   - Peribulbar anaesthesia
   - Facial blocks- O'Brein / Atkinson/Van lint and modifications
   - Frontal blocks
   - Infra orbital blocks
   - Blocks for sac surgery

2. Must be able to independently perform and deal with complications arising from the following surgeries :
   - Lid Surgery - Tarsorrhaphy
     Ectropion and entropion
     Lid repair following trauma
     Epilation
   - Destructive procedures
     Evisceration with or without implant
     Enucleation with or without implant
   - Sac surgery
     i. Dacryocystectomy
     ii. Dacryocystorhinostomy
     iii. Probing for congenital obstruction of nasolacrimal duct
   - Strabismus surgery
     Recession and resection procedures on the horizontal recti.
   - Orbit surgery

   Incision and drainage via anterior orbitotomy for abscess
   - Cyclocryotherapy/Cyclophotocoagulation

3. PG Students should be well conversant with use of operating microscope and must be able to perform the surgeries listed below competently under the same:
   - Cataract surgery
     Standard conventional Extra Capsular Cataract Extraction; with or without IOL implantation (first year)
     Small incision Cataract Extraction (second year) with IOL implantation
     Phacoemusification (third year)
     Secondary AC or PC IOL implantation
   - Vitrectomy/Scleral buckling
     - Intra-vitreal and intra-cameral (anterior chamber) injection techniques and doses of drugs for the same

- Needs to know the basis of open sky vitrectomy (anterior segment) as well as management of cataract surgery complications.
- Assisting vitrectomy and scleral buckling procedures * Ocular surface procedures
  Pterygium excision with modifications
  Conjunctival cyst excision/foreign body removal
  Corneal foreign body removal
  Conjunctival flap/ peritomy

- Glaucoma
  - Trabeculectomy
- Corneal
  - Repair of corneo - scleral perforations
  - Corneal suture removal
  - Application of glue and bandage contact lens

4. Should have performed/assisted the following microscopic surgeries
   i. Keratoplasty
   Therapeutic, optical and tectonic
   ii Glaucoma surgery
   Pharmacological modulation of trabeculectomy Trabeculotomy
   Goniotomy
   Glaucoma valve implant surgery
5. Desirable to be able to perform Yag Capsulotomy and Laser iridotomy
   - Should be able to assist Focal and panretinal photocoagulation
6. Should have knowledge of Keratorefractive procedures

Operations:
The PG is provided with an opportunity to perform operations both extra-ocular and intra-ocular with the assistance of the senior post graduate students and/or under the direct supervision of a faculty member. The student is provided with an opportunity to learn special and complex operations by assisting the senior post graduate student or the faculty in operations of cases of the specialty and be responsible for the post-operative care of these cases.

In **first phase**, the post graduate student is given training in preparations of cases for operation, pre-medication and regional anaesthetic blocks. In the **next phase**, the post graduate student assists the operating surgeon during the operations. In the **third phase**, the post graduate student operates independently assisted by senior post graduate student or a faculty member. She/he is required to be proficient in some operations and show familiarity with others.

IV. SYLLABUS

Course contents:
These are only broad guidelines and are illustrative, there may be overlap between sections.

I. Basic Sciences:

1. Orbital and ocular anatomy
   i. Gross anatomy
   ii. Histology
   iii. Embryology
2. Ocular Physiology
3. Ocular Pathology
4. Ocular Biochemistry
   General biochemistry, biochemistry applicable to ocular function
5. Ocular Microbiology
   General Microbiology, specific microbiology applicable to the eye
6. Immunology with particular reference to ocular immunology
7. Genetics in ophthalmology
8. Community Eye Health

II. Optics

a. Basic physics of optics
b. Applied ophthalmic optics
c. Applied optics including optical devices
d. Disorders of Refraction

III. Clinical Ophthalmology

i. Disorders of the lids
ii. Disorders of the lacrimal system
iii. Disorders of the Conjunctiva
iv. Disorders of the Sclera
v. Disorders of the Cornea
vi. Disorders of the Uveal Tract
vii. Disorders of the Lens
viii. Disorders of the Retina
ix. Disorders of the Optic Nerve and Visual Pathway
x. Disorders of the Orbit
xi. Glaucoma
xii. Neuro-ophthalmology
xiii. Paediatric ophthalmology
xiv. Ocular involvement in systemic disease
xv. Immune ocular disorders
xvi. Strabismus and Amblyopia
xvii. Ocular oncology

V. TEACHING AND LEARNING METHODS

Teaching Methodology:

The theoretical knowledge is imparted to the post graduate student through distinct courses of lecture demonstrations, seminars, symposia and inter- and intra-departmental meetings. The students are exposed to recent advances through discussions in journal clubs and participation in CMEs, and symposia.

The post graduate students are imparted clinical training in several ways:

1. ***Group Discussion***
   The junior post graduate students may present the symposium to their senior postgraduates where it is fully discussed before finally being discussed in front of the faculty or senior eye specialists. A free and fair discussion is encouraged. These discussions enable the post graduate students to prepare for a general discussion in the class.

2. ***Clinical Case discussion***
   a. Bedside discussion on the rounds and outpatient teaching take their toll with patient management. Therefore in addition to these, clinical case discussions should form part of a department's schedule at a fixed time every week. This could range from 1-2 hours and could be held at least once a week. The choice and manner of presentation and discussion varies widely and is left to the discretion of the department. Every effort should be made to include as wide a variety of cases as possible over three years with multiple repetitions. Problem oriented approach is better as it aids in decision making skills.
   b. In addition to bedside teaching rounds, at least 5-hr of formal teaching per week are necessary.
   c. Consultant case presentation is another approach which should be encouraged as it aids in solving complex problems and also is forum for discussion of interesting cases.
   d. Case discussion on the patient's records written by the student is to be encouraged as it helps exercise the student's diagnostic and decision making skills. It also helps the consultant in critical evaluation of the student's progress academically.
   e. Case presentation at other in-hospital multidisciplinary forums
   f. The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
   g. Department should encourage e-learning activities.

3. Seminars
   Seminars should be conducted at least once weekly. The duration should be at least one hour. The topics selected should be repeated once in 3 years so as to cover as wide a range of topics as possible. Seminars could be individual presentations or a continuum (large topic) with many post graduate students participating.

4. Journal clubs

Journals are reviewed in particular covering all articles in that subject over a 6 months period and are discussed by the post graduate student under the following headings.

1) Aim
2) Methods
3) Observations
4) Discussions and
5) Conclusions

The post graduate student to whom the journal is allotted presents the journal summaries to the senior postgraduates. They are expected to show their understanding of the aspects covered in the article and clarify any of the points raised in the article, offer criticisms and evaluate the article in the light of known literature.

5. A postgraduate student of a postgraduate degree course in broad specialities/super specialities would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

6. **Out-Patients:** For the first six months of the training programme, post graduate students may be attached to a faculty member to be able to pick up methods of history taking and ocular examination in ophthalmic practice. During this period the post graduate student may also be oriented to the common ophthalmic problems. After 6 months, the clinical post graduate student may work independently, where he receives new and old cases including refractions and prescribes for them. The post graduate students are attached to a senior post graduate student and faculty member whom they can consult in case of difficulty.

7. Wards: Each post graduate student may be allotted beds in the in-patient section depending upon the total bed capacity and the number of the post graduates. The whole concept is to provide the post graduate student increasing opportunity to work with increasing responsibility according to seniority. A detailed history and case record is to be maintained by the post graduate student.

Relevance of beds and admissions in Ophthalmology has really gone down at present, as most of the surgical and special investigative procedures are being performed on out-patient basis. Most of the teaching has to be imparted in out-patients department and special Clinics.

8. Rotations: Specialty clinics

The student may rotate in the following subspecialty clinics:

- Anterior segment and cataract
- Glaucoma
- Oculoplastics
- Paediatric ophthalmology and strabismus

- Retina and Uvea
- Cornea, Contact lens and low vision
- Neuroophthalmology
- Refractive Clinic

9. Practicals in Ocular Histopathology

The post graduate students may be provided with fully stained slides of the ocular tissues along with relevant clinical data and discuss the diagnosis and differential diagnosis on the basis of the information provided

10. Attend accredited scientific meetings (CME, Symposia, and Conferences).

11. Additional sessions on basic sciences, biostatistics, research methodology, teaching methodology, hospital waste management, health economics, medical ethics and legal issues related to ophthalmology practice are suggested.

12. Posting

All PG students shall be posted in OPD, ward and OT as per their units.

PG students should be posted in emergency to deal with any ocular emergency in casualty as well as posting at PHCs on rotational basis

Effort should be made to expose PG students to the latest techniques even though they may have to be sent for sometime to the centers performing and using latest instruments or surgeries.

13. Maintenance of **Log Book**: Log books shall be checked and assessed periodically by the faculty members imparting the training.

VI. ASSESSMENT

FORMATIVE ASSESSMENT, ie, during the training

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

Annual assessment is held at the end of each year for three years.
Formative assessment will not count towards pass/fail at the end of the program, but will provide feedback to the candidate.

Internal assessment

The performance of the Postgraduate student during the training period should be monitored throughout the course and recorded in the logbooks as evidence of the ability and daily work.
Annual practical/oral examination: Practical exam and viva examination at end of each year.
OSCE - Introduction of OSCE for internal assessmetn

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and clinical examination.

Six monthly assessment during the MS training should be based on following educational activities:

1. **Journal based / recent advances learning**
2. **Patient based /Laboratory or Skill based learning**
3. **Self directed learning and teaching**
4. **Departmental and interdepartmental learning activity**
5. **External and Outreach Activities / CMEs**

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I)

SUMMATIVE ASSESSMENT, ie., assessment at the end of training

The pass percentage will be 50%
Candidate will have to pass theory and practical examinations separately.

POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.

The Post Graduate examination shall be in three parts:

1. **Thesis:**

   Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised Post Graduate Teacher, the result of which shallbe written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination.

   The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners. From regulations)

2. **Theory Examination:**

   The examinations shall be organised on the basis of ‘Grading’or ‘Marking system’ to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in ‘Theory’ as well as ‘Practical’ separately shall be mandatory for

passing examination as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

There shall be four theory papers.

Paper I: Basic Sciences related to Ophthalmology, Refraction & Optics
Paper II: Clinical Ophthalmology
Paper III: Systemic Diseases in Relation to Ophthalmology
Paper IV: Recent Advances in Ophthalmology and Community Ophthalmology

Scheme of theory examination for M.S. Ophthalmology

Q. No.1	Long Answer Question	20 Marks
Q. No.2	Long Answer Question	20 Marks
Q. No.3	Short Answer Question (10 marks each x 6)	60 Marks
	Total	**100 Marks**

3. Clinical/Practical and oral/viva voce examination

Clinical

1 long case
2 short cases with different problems
2 fundus Cases
1 refraction case

Oral/Viva voce Examination shall be comprehensive enough to test the post graduate student**'s overall knowledge of the subject and shall include:**

i. Instruments
ii. Pathology specimens
iii. Drugs, X-rays, USG/OCT/CT/MRI Scans, etc.
iv. Visual fields and other ophthalmic diagnostic charts

Scheme of Practical Examination for M.S.

Seat No.	Practical (300 Marks)				Viva (100 Marks)				Total (400 Marks)
	Long Case (1x100)	Short Cases (2x50=100)	Fundus Cases (2x40= 80)	Refraction Case (1x20)	Instruments (25 Marks)	Pathology Specimens (25 Marks)	Drugs & X-ray USG/OCT/ CT/MRI/ Etc. (25 Marks)	Visual Fields & other Ophthalmic Diagnostic Charts (25 Marks)	

VII. MANDATORY COMPLIANCE

1	The Model Weekly Time Table for Teaching learning activities is enclosed as	**:**	**Annexure – I**
2	Mandatory compliance of a PG student in T.L. process and CIA during the three year of study are given in	**:**	**Annexure – II**
3	The units for Quarterly assessment for CIA is given in	**:**	**Annexure – III**
4	Post Graduate student Quarterly Appraisal form for CIA is enclosed as	**:**	**Annexure – IV**
5	Mandatory Requirements to be eligible to appear for the University Summative Evaluation Examination is given in	**:**	**Annexure – V**
6	The Proforma of the Certificate on Attendance, Training Completion, Publication and Presentation Research / Poster / oral submission of Dissertation and present of all theory practical fee to be duly filled in and duly signed by PG Guide HOD, Finance Officer, Dean of faculty an HOI to be submitted to university COE before the issue of Hall Ticket for final exam is given us	**:**	**Annexure – VI**
7	The model QP pattern of paper I/II/III/IV, each of 100 marks and of 3 hours duration is enclosed as	**:**	**Annexure – VII**

8 The model Blue print for setting of Question papers and proper verbs/ phrases to be used in QP setting is given in **: Annexure – VIII**

9 The model marks list for practical and Vivavoce for PG medical MD/MS/ examination is enclosed as**. : Annexure – IX**

VIII. RECOMMENDED READING:

Books (latest edition)

1. Ophthalmic Surgery: Principles and Techniques. Blackwell Science. Albert DM.
2. Principles and Practice of Ophthalmology. Albert DM, Jakobiec. W B Saunders
3. Principles & Practice of Ophthalmology. Gholam A Paymen
4. The Current American Academy of Ophthalmology Basic and Clinical Science Course (13 volumes)
5. Duke Elder's Practice of Refraction. Abrams D. Churchill Livingstone.
6. Text book of Ophthalmology. Yanoff and Duker
7. Retina. Stephen J Ryan:
8. Ophthalmic Ultrasound: Sandra Byrne and Ronald Green.
9. Cornea: Fundamentals, Diagnosis, and Management. Krachmer JH, Mannis MJ, Holland EJ. Mosby Elsevier.
10. Ophthalmology. Yanoff N, Duker JS. Mosby Elsevier.
11. Review of Ophthalmology. Friedman NJ, Kaiser PK, Trattler WB. Elseview Saunders, Philadelphia.
12. Corneal Transplantation. Vajpayee RB. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
13. Fundamentals of Clinical Ophthalmology Series. Coster D. Cornea. Blackwell Publishing Limited.
14. The Contact Lens Manual. A practical guide to fitting. Gasson A, Morris A J. Butterworth Heinemann Elsevier.
15. Steinert's cataract surgery.
16. Shields Text book of glaucoma
17. Smith and Nozik : Uvea
18. Rootman's diseases of the orbit
19. Eyelid, conjunctival and orbital tumors. An atlas and textbook. Shields JA, Shields CL. Philadelphia: Lippincott Williams & Wilkins.
20. Intraocular tumors. An atlas and textbook. Shields JA, Shields CL.
21. Pediatric Ophthalmology. Taylor and Hoyt: Saunders Ltd.
22. Management of Strabismus and Amblyopia. Pratt-Johnson and Tilson: Thieme Verlag.
23. Handbook of Pediatric Eye and Systemic disease. Wright, Spiegel and Thompson.
24. BinocularVision and Ocular Motility. Theory and Management of Strabismus. Von Noorden GK. Mosby.
25. Surgical Management of Strabismus. Helveston:
26. Strabismus: A Decision Making Approach. Von Noorden and Helveston:
27. Thyroid Eye Diseases. Char DR. Williams and Wilkins, Baltimore.
28. A Manual of Systematic Eyelid Surgery.Collin JRO (ed). Churchill Livingstone, Edinburgh.
28. Refractive Surgery. Agarwal A, Agarwal A, Jacob Soosan. Jaypee.

29. LASIK Complications, Prevention and management. Gimbel HV, Penno EEA. Slack Inc.
30. Management of Complications of Refractive Surgery. Alio JL, Azar DT. Springer.
31. Quality of Vision: Essential Optics for the Cataract and Refractive Surgeon. Holladay JT. Slack Inc.
32. Ocular Pharmacology: Havener
33. Anatomy: Wolff 's Anatomy of the Eye and Orbit
34. Physiology: Adler's Physiology of the Eye
35. Textbook of Ophthalmology (2 volumes). Easty DL, Sparrow JM.Oxford Oxford Medical Publications.
36. The Eye. Basic Sciences in Practice. Forrester JV, Dick AD, McMenamin PG, Lee WR. W B Saunders.
37. A Stereoscopic Atlas of Macular Diseases: Diagnosis and Treatment. Gass JDM.
38. Neuroophthalmology. Glaser JS. LipincottWilliams & Wilkins. .
39. Clinical Ophthalmic Pathology. Harry J, Misson G. Butterworth/Heinemann.
40. Inherited Retinal Diseases. A Diagnostic Guide. Jimenez Sierra JM, Ogden TE, Van Boemel GB. Mosby.
41. Clinical Ophthalmology. Kanski JJ. Butterworth/Heinemann.
42. ABC of Resuscitation. Colquhoun, M. C., Evans, T. R., Handley, A. J. BMJ Publishing Group.
43. Walsh and Hoyt's Clinical Neuroophthalmology (5 volumes). Miller NR, Newman NJ, Williams and Wilkins.
44. The human eye. Oyster CW Sinauer Associates. Sunderland. Massachusetts
45. Paediatric Ophthalmology. Taylor D. Blackwell Science.
46. Decision Making in Ophthalmology. Van Heuven WAJ, Zwann J. Mosby.
47. Parsons' Diseases of the eye. Sihota and Tandon.
48. Wills Eye Manual
49. International Council of Ophthalmology Residency Curriculum available at http://www.icoph.org/

Journals

03-05 international Journals and 02 national (all indexed) journals

American Journal of Ophthalmology
British Journal of Ophthalmology
Archives in Ophthalmology
Ophthalmology
Indian Journal of Ophthalmology

Annexure - I

P.G. Teaching Time Table – Model

Clinical postings (OPD – IPD Duties Ward Rounds, Casualty posting, ICU posting, posting to support Departments like Radiology, Anesthesia CCL , Pathology, FMT, Postings to field work and PHCs Camps and other postings as per provisions of MCI, are mandatory on all week Day as per posting.

Day of the week	Time 03 to 5 PM
Monday	Journal Club
Tuesday	Case presentation / Micro Clinic- Patient based Training
Wednesday	Seminar / GD / Panel Discussion
Thursday	Lecture by Faculty on select Topics
Friday	Clinical Meet / CPC / CME
Saturday	Guest Lecture by Experts / Skill Lab or Simulation Lab
Sunday (Select ones)	Medical Camps / Blood Donation Camp / Other types of Camps

Note

1. The Dept may select suitable days for a particular task assigned. But all of 7 tasks per week are a must
2. All the PG Teachers, PG students must attend these PG TLE Activities.
3. Attendance for these activities shall be maintained at the Department and Institutions. Implementation of the MCI Regulations, Syllabus and Time Table is the responsibility of HOD / HOI.

HOD HOI DEAN OF FACULTY REGISTRAR

Annexure – II

Mandatory Compliance of a PG student in Teaching – Learning Activities
As per MCI Regulations Syllabus and Advisory

Sr. No.		Activities to be carried at by a PG student	Number per Ist year (Minimum)	Number Per IInd Year (Minimum)	Number per IIIrd year (Minimum)	Total Number (Minimum) For 3 years
1		Presentation of Journal Articles in Journal club	12	12	6	30
2	a	Case Presentation / Clinic	4	8	8	20
	b	Skill Lab & Simulation	4	4	4	12
3	a	Presentation of Seminars	4	4	4	12
	b	Leading a Group Discussion on a select Topic	4	4	4	12
	c	Assignment submission	4	4	4	12
4	a	Lectures / Tutorials to UG students /panel Discussion	4	4	4	12
	b	Clinical meeting CMC/ CPC	12	12	12	36
	c	BLS	1	--	--	1
	d	ACLS	1	--	--	1
5		Medical Camps Health Checkup at Villages / Schools/ Blood Donation / etc.	6	6	6	18
6	a	Orientation Programme	1	1	1	3
	b	Research Methodology Workshop	1	--	--	1
	C	Presentation of synopsis of the Thesis / Dissertation	1	--	--	1
	d	Presentation of Mid Term work of Thesis / Dissertation	--	1	--	1
	e	Presentation of final Draft of Dissertation / Thesis	--	--	1	1
	f	Presentation of Research Article	--	0 or 1	0 or 1	1
	g	Publication of an Article	--	0 or 1	0 or 1	1 or 2
7		LOG Book	1 (a)	1 (b)	1 (c)	1 a+b+c
8		CIA	4	4	4	12
9		Any other Activity Specified by Dept.				

Note: - 1. The Department may conduct periodic preparatory tests in Theory / Practical/Clinicals and Vivavoce. Quiz and MCQ test may to be adopted

2. The 12th CIA may also include a preparation examination on the model of university examination as a training cum assessment

HOD HOI DEAN OF FACULTY REGISTRAR

Annexure – III

Units of Quarterly Assessment of Every student (Internal)

Formative Assessment – Quarterly Assessment (Total 12 CIAs)

As per Annexure III.

1. **Journal Based / Recent Advances learning**
   (Bases on Journal Clubs / Select Article Presentation, Review Article preparation and presentation)
2. **Patient Based and Laboratory Based and skill Based learning**
   (Based on clinical Posting – OPD / IPD Ward Rounds/ casualty/ Case Examination/ presentation /Diagnosis / Interpretation /of Clinical Diagnostics/ Differential Diagnosis, Prognosis/ Morbidity/ Mortality/ Community Medicine/ Promotion/ prevention/ Control/ Prophylaxis/ Epidemiology/ Simulation Studies/ Skill Based Studies and so on)
3. **Self Directed Learning and Teaching**
   (Seminars Panel Discussion Group Discussion, Assignments, Case studies, Preparation of Charts and Models etc. , Role Play, Debates, Moot courts, etc)
4. **Departmental and Inter Departmental Learning Activities.**
   (Participation in UG/PG teaching / Horizontal and Vertical Integrated Lectures, Clinical meeting / CPC / CME)
5. **External and out research Activities**
   (Participation in Camps, Posting and Visit to PHCs, Satellite clinics, Mobile Clinics, Health checkup Camps, Blood Donation Camps, Immunization Camps school Visits. Crisis / Disaster Management, Celebration of Commemorative Days and soon)
6. Thesis / Dissertation Research Work related to selected Topic
7. a) Log Book maintenance/ Portfolio management - To maintain LOG Book or portfolio management of all the TL Activities
   b) Presentation / Publications of Research Article

No.		Particulars	Minimum for 3 months
1		Journal based Recent Advance Learning- Presentation of select Article in Journal clubs	3
2	a	Patient Based laboratory or Skill based learning- Case presentation / Clinic	1 (1st year) 2 (2nd & 3rd year)
	b	Skill Lab / Simulation Lab Work	1
3	a	Self Directed Learning & Teaching- Presentation of Seminar	1
	b	Leading a Group Discussion on select Topic in GD	1
	c	Assignment Submission	1
4	a	Lecture / Tutorials / Panel Discussions with UG students	1
	b	Clinical Meetings (CME's) CPC/Dept. meeting	3
5		Medical Camps	1
6		Dissertation Work Research methodology workshop	Yes / No
7		Log Book & Attendance	Yes / No
8		Any other Activity Prescribed (T/P/Viva)	Yes / No

HOD HOI DEAN OF FACULTY REGISTRAR

Annexure IV

Postgraduate Students Appraisal Form
Pre / Para /Clinical Disciplines – MD/MS Degree

Name of the Department/Unit : **Roll No.:**
Name of the PG Student :
Period of Training : FROM……TO……

Quarterly Assessment (1/2/3/4/5/6/7/8/9/10/11/12)

Sr. No.	PARTICULARS	Not Satisfactory			Satisfactory			More Than Satisfactory			Remarks
		1	2	3	4	5	6	7	8	9	
1.	Journal based / Recent advances learning										
2.	Patient based/Laboratory or Skill based learning										
3.	Self-directed learning and teaching										
4.	Departmental and interdepartmental learning activity										
5.	External and Outreach Activities / CMEs										
6.	Thesis / Research work										
7.	Log Book Maintenance										
8.	Performance in Theory/Practical/Viva voce Tests										
	Overall Assessment										

- **Publications of Research Article** **Yes/ No**
- **Presentation of Research Article**
- **The student has complied with mandatory requirement for quarterly assessment & presentation of Research Profile**
  Yes/No

Remarks*_____
_____
_____

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.**

SIGNATURE OF ASSESSEE **SIGNATURE OF HOD**

HEAD OF THE INSTITUTION

Annexure - V

Mandatory Requirements to be eligible to eligible to appear for university Summative Examination / Evaluation – As per MCI Regulations.

(As per MCI Medical Education Regulation 2000, amended from time to time till date)

1. Minimum percent of Attence as per MCI Regulations.
2. Satisfactory performance in 12 CIA conducted and certified by HOD HOI and PG Guide.
3. Certificate from F.O. stating that all the fees due from the student are paid and credited to PIMS-DU A/.c
4. Presentation of a Research Article / Poster in a national / state level conference /Seminar / Workshop.
5. Publication of a Research Articles as first – author in (indexed in supus or web of science or as fixe by MCI Regulations and visited by UGC (ARE list).
6. a) Thesis – Finalisation of Topic and Title – submission of Synopsis following IEC clearance within 6 months of Adm. Topics
   b) After II year of a Admission or 3 terms Midterm Review .
   c) Thesis to be submitted at least 6 months before final examination.
   d)Thesis to be examined by 3 Examiners. (1 Internal and 2 External PG Examiners)
   e) Its Acceptance is a must for appearing for University T & P Exam

Note :- HOD & HOI shall ensure provisions of 1,2,3,4,5,6 a,b,c. The COE shall ensure provisions of 1,2,3,4,5,6 a,b,c ,d,e & e as per MCI Regulations

HEAD OF DEPARTMENT HEAD OF INSTITUTION DEAN OF FACULTY REGISTRAR

Annexure - VI

Ref. No. Date: _____

Complaince to MCI's Regulations Governing Post Graduate Programme in Medical Faculty

Department of _____ PG Programme: MD/ MS in _____

Name of Candidate: _____, JR-III

PRN No. _____ Date of Admission _____

Certification on
Attendance and Training Completion
Publication & Presentation of Research Articles (Poster/ Oral)
Submission of Dissertation & Payment of All types of prescribed fees

It is hereby certified that the said candidate JR-III in the Dept. of _____ at Rural Medical College has completed 6 academic terms/ 3 academic years and fulfilled the prevailing provisions of the MCI Regulations governing MD/MS PG programmes and the rules of PMT, PIMS-DU. Details are as under.

1.	**Attendance Fulfillment ***	**% Attendance**	**Remark – Eligibility**
	I Academic Term		
	II Academic Term		
	III Academic Term		
	IV Academic Term		
	V Academic Term		
	VI Academic Term		
	Overall fulfillment		Fulfilled / Not Fulfilled
	* Fulfillment of a minimum of 80% of attendance/ academic term, for 6 terms/ 3 years including imparted training, assignment, fulltime responsibilities and participation in all facets of PG education process including periodic assessment and so on as per MCI Regulations.		
2.	Log Book maintained as per MCI Regulations & Fulfilled the graded responsibilities in the management and treatment of patients entrusted for their care Verified by Dr. _____ Certified by Dr. _____		Yes/ No
3.	Successful participation in teaching and training programmes organized by the department for UG and Interns		
4.	Presented and Participated in Seminars, Journal Clubs, Case Presentations, Group Discussions, Clinical Meetings, CME Ward Round, CPC, Practicals organized by the Department as per the timetable.		
5.	Participated in training sessions in diagnostics, medical/ surgical training, in basic/ applied medical and allied clinical specialties and Medical Camps as per the timetable		
6.	The Performance of the PG students in 12 CIAs (Conducted quarterly) are satisfactory as per appraisal proforma as per MCI Regulations.		

7.	Presented one research poster and one research article (oral) in a Seminar/ Symposia/ Workshop/ Conference (National/State). The certificates for presentation of paper/ poster are enclosed.	
8.	Published one research article in a scientific journal as per norms. The copy of the published research article is enclosed.	
9.	Submitted a Dissertation entitled _____ _____ _____ _____ under the guidance of Dr. _____	
10.	Paid all the fees (tution fees and other fees) vide receipt No._____ for all 3 years.	
11.	Produced NOC from all the sections of PMT PIMS-DU concerned about "NO DUES"	
12.	Paid Examination fees of Rs. _____ vide Challan/ Receipt No. _____ dated _____ issued by Finance Officer PIMS-DU.	

It is hereby declared that the all the duly certified and verified documents, related to the aspects mentioned above, are in the custody of department concerned and student section of Rural Medical College with due authentication and signature of concerned HOD/ Dean/ Principal/ Dean of Faculty) and will be made available for any MCI inspection as per norms and Regulations.
Accordingly He/She is eligible/ not eligible for appearing in final year PG examination as per the MCI Regulations governing PG Programmes.

PG Guide
Dr. _____

Seal

Head of the Department
Dr. _____

Verified and certified that all types of prescribed fees and fines PMT, PIMS-DU, College, Hostel & Others mentioned at sl.no. 10, 11, 12 are paid by the student and credited to the accounts of PMT & PIMS-DU.

Seal

Finance Officer
PIMS-DU

Verified the relevant documents and certify that the candidate is eligible to appear for final year PG Examination as per MCI Regulations and rules of PIMS-DU.

Dean
Faculty of Medicine

Seal

Dean
Rural Medical College

Ref_____ **For Officer Use Only** Date: _____

The HOD, HOI and Dean have certified that the

a. Candidate is eligible to appear for PG Theory and Practical/ Clinical Examination as per MCI Regulations. F.O. has certified that all the fees has been credited to PMT, PIMS-DU Accounts.
b. The Dissertation submitted has been evaluated by external examiners and then have approved the same for acceptance as per MCI Regulations.
c. Hence the candidate be permitted to appear for the PG examinations (Theory & Practical/ Clinical) scheduled in the month of _____ year _____.

Controller of Examinations

Seal

Submitted for perusal and approval

Vice Chancellor

Annexure – VII

PRAVARA INSTITUTE OF MEDICAL SCIENCES
(Deemed to be University)

Post Graduate Degree in Ophthalmology (MS)

Examination _____ 20__

Paper – I/ II/ II/ IV

Paper Title : _____ Date: / /20

Marks : 100 Time:

Instructions to candidate:

1) All questions are compulsory
2) Answer written in illegible handwriting will not be assessed.
3) Write answers on both sides of answer paper.
4) Neat diagrams must be drawn wherever necessary.
5) Write prescription where indicated, and in the use of drugs their doses should be given.

Que. 1 Marks 20

Que. 2 Marks 20

Que. 3 Write Short notes on Marks 60 (10x6)

a

b

c

d

e

f

Annexure – VIII

Table 1: Showing BLUEPRINTING for theory paper setting

The number of Questions & their distribution of marks shall be as per MCI model Question Paper [only Illustration]

LAQ/ SAQ and their Marks

LEVEL	Q	Q	Q	Q	Q	Q	Q	Total
	Mark	Mark	Mark	Mark	Mark	Mark	Mark	
Knowledge								
Comprehension								
Application								
Analysis								
synthesis								
Evaluation								
TOTAL								**1000**

The Questions (Whether LAQ or SAQ) Must aim at assessing all the 6 domains

Note: This is only an illustration. Actual Number of Questions and their distribution of marks shall be as per model Question Paper of MCI. (i.e. regarding the number of LAQ / SAQ and their marks distribution)

Table 2: Showing appropriate verbs suitable to level of knowledge for theory paper setting

Level	Suggested Verbs
Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalize, Identify, Illustrate, Interpret, Review, Summarize
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyze, Characterize, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorize
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organize, Plan, Produce, Propose, rewrite
Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritize, Prove, Rank

Table 3: Showing examples of theory questions

Sr. No.	Type	Explanation	Examples
1	**Long essay question**	✓ Question should pose clinical problem that will require student to apply knowledge along with integration with disciplines ✓ Avoid one liner as question ✓ Question stem should be structured ✓ Marking distribution should be provided ✓ Use of proper verbs from higher domains as given in this document ✓ Avoid recall based questions	
2	**Short notes**	✓ Sample a wider content ✓ Questions should be task oriented ✓ Reasoning questions provide opportunity for testing integration, clinical reasoning and analytical ability of the student	

Table 4: Showing Objective structured clinical examination [OSCE] typical station

Sr. No.	Type of station	Time allotted	Example	Evaluation
1	Procedure			
2	Response			

Annexure – IX

University Examination
Model Marks Sheet
For Practical / Clinical Examination and Viva voce

Duration _____ **Max Mark – 400**

Illustration only

No.	Type of Examination	Marks Allotted	Scored
1	**Long Cases**		
2	**a) Short cases (No. of small cases and Marks for each cases) 1/2/3/4-------- b) Ward Round c) Any other**		
3	**Spotter / OSPE/ Oral / Vivavoce Sub Divisions i) iv) ii) v) iii) vi)**		
	Ground Total	**400**	

PG Examiners		**Name**	**Signature**
1	**Chairman Name**		
2	**Internal Examiner**		
3	**External Examiner**		
4	**External Examiner**		

Date:-
Place :-

Note:- 1) The Number of cases, type of cases and type of practical and orals / vivavoce and their distributions of marks shall be as per MCI Regulations / Syllabi.
2) The HOD / Chairman / Co Chairman BOS shall ensure at this proforma is prepared as per the MCI Regulations / Syllabi.

Annexure I

Postgraduate Students Appraisal Form
Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student:

Period of Training: FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory			Satisfactory			More Than Satisfactory			Remarks
		1	2	3	4	5	6	7	8	9	
1.	Journal based / recent advances learning										
2.	Patient based /Laboratory or Skill based learning										
3.	Self directed learning and teaching										
4.	Departmental and interdepartmental learning activity										
5.	External and Outreach Activities / CMEs										
6.	Thesis / Research work										
7.	Log Book Maintenance										

Publications Yes/ No

Remarks*_____

_____

_____

*REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD

Annexure I

Postgraduate Students Appraisal Form
Pre / Para /Clinical Disciplines

Name of the Department/Unit :
Name of the PG Student :
Period of Training : FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory			Satisfactory			More Than Satisfactory			Remarks
		1	2	3	4	5	6	7	8	9	
1.	Journal based / recent advances learning										
2.	Patient based/Laboratory or Skill based learning										
3.	Self directed learning and teaching										
4.	Departmental and interdepartmental learning activity										
5.	External and Outreach Activities / CMEs										
6.	Thesis / Research work										
7.	Log Book Maintenance										

Publications Yes/ No

Remarks* _____
_____
_____

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.**

SIGNATURE OF ASSESSEE **SIGNATURE OF CONSULTANT** **SIGNATURE OF HOD**

PRAVARA INSTITUTE OF MEDICAL SCIENCES * (Deemed to be University) * Loni - 413736 Tal - Rahata Dist. Ahmednagar (M.S. India)

Registrar
Pravara Institute of Medical Sciences
(Deemed to be University)
Loni - 413736,Tal. Rahata
Dist. Ahmednagar (M.S. India)