



SHRI
DHARMASTHALA
MANJUNATHESHWARA
UNIVERSITY

Ordinance Governing
M. S. OPHTHALMOLOGY
Curriculum 2019-20

SHRI DHARMASTHALA MANJUNATHESHWARA UNIVERSITY

(A State Private University established under the Shri Dharmasthala Manjunatheshwara University
Act No 19 of 2018 of Government of Karnataka and Notification No. ED 261 URC 2018 dated 19th December 2018)

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|| Om Shri Manjunathaya Namaha ||



Shree Kshethra Dharmasthala

Edition Year : 2019-20

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THE LOGO

Poojya Dr D. Veerendra Heggade, Hon'ble Chancellor of the University, while searching for an appropriate Logo for the University, saw a photograph picked from Temple Architecture showing Wings of a Bird, sculpted in Indian style and wanted it to be incorporated in the logo for the University, as the Wings symbolize 'Spreading of Knowledge beyond Boundaries'. Further it was felt that the Central theme of the logo should be 'Rudra' (The Linga) with three wings on each side. In this way, the logo of the University was conceptualized.

Hence:

1. The central part represents **Rudra** who Demolishes Darkness.
2. The Three **horizontal lines on The Linga** stand for Samyak Darshan (Right Belief), Samyak Gyan (Right Knowledge) and Samyak Charitra (Right Conduct).
3. The **Wings** symbolize spreading of Knowledge across the boundaries.
4. Base line **"Truth Liberates"** highlights the Purpose of Education: to liberate oneself unconditionally. It shows that it is not discipline, nor knowledge nor the efforts to freedom that liberate but Truth is what liberates you from all your conditioning and ignorance.

The overall significance of Shri Dharmasthala Manjunatheshwara University's Logo is:

Darkness of ignorance is destroyed by the flow of knowledge to bring Liberty to everyone, by realizing the truth. And, it should spread globally without the boundaries as hindrance.



SHRI
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VISION

Shri Dharmasthala Manjunatheshwara University will set the highest standards of teaching and learning by awakening the intelligence of the students and nurturing the creativity hidden in them by creating an environment where the ancient wisdom blends with modern science, to transform them into whole human beings to face the challenges.

MISSION

- ▶ To ensure that the journey of education is inspiring, pleasant and enjoyable.
- ▶ Attract the best of teachers and students.
- ▶ Achieve high principles of trust, love and spirituality in the students.
- ▶ Create a collaborative, diverse and exclusive community.
- ▶ Transform the student of today to be a leader of tomorrow and a better human being.
- ▶ Produce passionate teachers.
- ▶ Evolve innovative teaching techniques.
- ▶ Create a peaceful environment.
- ▶ Prepare the student to face the social challenges.
- ▶ Create a University of which the Nation is proud of.
- ▶ Be an effective partner in Nation Building.
- ▶ Create an Eco-friendly University.
- ▶ Create a University based on the principles of beauty, love and justice.

||Om Shanti! Om Shanti! Om Shanti||



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SDMU/Notif/28/2019

Date: 24 - 04 - 2019

NOTIFICATION

Regulations and Curricula of Medical Postgraduate Degree Courses in Clinical Subjects - 2019

- Ref:**
- Minutes of the Board of Studies - Medical PG held on 16-03-2019 (SDMU/BOS PG: 01/2019) dated 16-03-2019
 - Minutes of the 1st Joint Faculty Meeting held on 19-03-2019 (Letter No: SDMU/JF/M-01/85/2019; Dated: 19-03-2019)
 - Minutes of the 1st Meeting of Academic Council held on 20-03-2019 (Letter No: SDMU/AC/M-01/93/2019; Dated: 21-03-2019)
 - Minutes of the 2nd Meeting of BoM held on 22-03-2019 (Letter No: SDMU/BoM/M-02/94/2019; Dated: 23-03-2019)

Ordinance: In exercise of the powers conferred under Statutes 1.1 (Powers - Section xii), 1.2 (Powers and Functions - Section vii), 1.4 (Powers and Functions - Sections ix & x), 1.5b (Powers and Functions - Sections b & c) of Shri Dharmasthala Manjunatheshwara University, the BoM is pleased to approve and notify the Ordinance governing Regulations and Curricula of the following Medical Postgraduate Degree/ Diploma Courses in Clinical Subjects - 2019:

| Sl No | Course | Sl No | Course |
|-------|-------------------------|-------|---------------------------------|
| 1 | M.D. (General Medicine) | 7 | M. D. (Hospital Administration) |
| 2 | M. D. (Pediatrics) | 8 | M. S. (General Surgery) |
| 3 | M. D. (Dermatology) | 9 | M. S. (Ophthalmology) |
| 4 | M. D. (Psychiatry) | 10 | M. S. (Orthopedics) |
| 5 | M. D. (Anaesthesiology) | 11 | M. S. (Otorhinolaryngology) |
| 6 | M. D. (Radio-Diagnosis) | 12 | M. S. (Obstetrics & Gynecology) |

Diploma

- 1 Diploma in Public Health

The ordinance shall be effective for the students joining the courses during 2019-20 and onwards.

By Order

REGISTRAR

- To:**
1. The Principal, SDM College of Medical Sciences & Hospital.
 2. Members of BoG, BoM & Academic Council, Shri Dharmasthala Manjunatheshwara University

- Copy to:**
1. The Vice-Chancellor, Shri Dharmasthala Manjunatheshwara University
 2. The Controller of Examinations, Shri Dharmasthala Manjunatheshwara University

GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR MS IN OPHTHALMOLOGY

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 which will result in creating competent ophthalmic surgeons with appropriate expertise. It is not designed to be all inclusive but rather a guideline for the training of ophthalmic specialists.

A. SUBJECT SPECIFIC LEARNING 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.
- 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.
- 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 counselling and proper consent taking.

B. Duration of Study

The period of training for obtaining the degree shall be three completed years including the period of examination.

Provided that in the case of students having a MCI/NMC recognised two year postgraduate diploma course in the same subject, the period of training, including the period of examination, shall be two years.

C. 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 on-going 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 centres 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 fulfilment 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:

- a) Acquire scientific and rational approach to the diagnosis of ophthalmic cases presented.
- b) Acquire understanding of and develop inquisitiveness to investigate to establish cause and effect of the disease.
- c) To manage and treat all types of ophthalmic cases.
- d) To competently handle and execute safely all routine surgical procedures on lens, glaucoma, lid, sac, adnexa, retina and muscle anomalies.
- e) To competently handle all ophthalmic medical and surgical emergencies.
- f) To be familiar with micro-surgery and special surgical techniques.
- g) 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.

2. Refraction:

- a) Acquire competence in assessment of refractive errors and prescription of glasses for all types of refraction problems.
- b) 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:

- a) Examine, diagnose and demonstrate understanding of management of the problems of neuro-ophthalmology and refer appropriate cases to neurology and neuro-surgery.
- b) Examine, diagnose and demonstrate understanding of management of (medical and surgical) complicated problems in the field of :
 - lens,
 - glaucoma,
 - cornea,
 - retina,
 - paediatric ophthalmology,
 - oculoplasty,
 - uvea, and
 - genetic problems in ophthalmology.
- c) To demonstrate understanding of the manufacture, and competence in prescription and dispensing of contact lenses and ocular prosthesis.

4. Ophthalmic pathological/microbiological/biochemical sciences

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

5. Community Ophthalmology

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. They should be able to guide rehabilitation workers in the organisation and training of the blinds in art of daily living and in the vocational training of the blind leading to gainful employment.

6. Research :

- a) Recognise a research problem.
- b) State the objectives in terms of what is expected to be achieved in the end.
- c) Plan a rational approach with appropriate controls with full awareness of the statistical validity of the size of the material.
- d) Spell out the methodology and carry out most of the technical procedures required for the study.
- e) Accurately and objectively record on systematic lines results and observation made.
- f) Analyse the data with the aid of an appropriate statistical analysis.
- g) 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.

- h) Write a thesis in accordance with the prescribed instructions.
- i) 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:

1. **Examination techniques along with interpretation**
 - a) **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

b) Fundus evaluation

- i. Direct/Indirect ophthalmoscopy
- ii. Fundus drawing
- iii. 3-mirror examination of the fundus
- iv. 78-D/90-D/60-D examination
- v. Amsler's charting

2. Basic investigations along with their interpretation

a) Tonometry- Applanation/Indentation/Non-contact

b) Gonioscopy -Gonioscopy grading of the anterior chamber angle

c) Tear/ Lacrimal function tests

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

d) Cornea

- i. Corneal scraping and cauterization
- ii. Smear preparation and interpretation (Gram's stain /KOH)
- iii. Media inoculation
- iv. Keratometry - performance and interpretation
- v. Pachymetry
- vi. Corneal topography - if available

e) Colour Vision evaluation

- i. Ishihara pseudoisochromatic plates
- ii. Farnsworth Munsell, if available

f) Refraction

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

g) Diagnosis and assessment of Squint

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

h) Exophthalmometry

Usage of Hertel's exophthalmometer - proptosis measurement

i) Contact lenses

- i. Fitting and assessment of RGP and soft lenses
- ii. Subjective verification of over refraction
- iii. Complications arising of contact lens use
- iv. Educating the patient regarding CL usage and imparting relevant knowledge of the complications arising thereon

j) Low Vision Aids

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

3. 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:

- a) Fundus photography
- b) Fluorescein angiography
- c) Ophthalmic ultrasound A-scan/B scan
- d) Automated perimetry for glaucoma and neurological lesions
- e) 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
- f) OCT and UBM
- g) ERG, EOG, and VEP

4. Minor surgical procedures – Must know and perform independently

- a) Conjunctival and corneal foreign body removal on the slit lamp
- b) Chalazion incision and curettage
- c) Pterygium excision
- d) Biopsy of small lid tumours
- e) Suture removal- skin/conjunctival/corneal/ corneoscleral
- f) Tarsorrhaphy
- g) Subconjunctival injection
- h) Retrobulbar, parabulbar anaesthesia
- i) Posterior Sub-Tenon's injections
- j) Artificial eye fitting

5. Surgical procedures

a) **Must know and can perform independently**

- i. Ocular anaesthesia:
- ii. Retrobulbar anaesthesia
- iii. Peribulbar anaesthesia
- iv. Facial blocks- O'Brein / Atkinson/Van lint and modifications
Frontal blocks
- v. Blocks for sac surgery

b) **Must be able to independently perform and deal with complications arising from the following surgeries :**

i. **Lid Surgery-(Tarsorrhaphy)**

- Ectropion and entropion
- Lid repair following trauma
- Epilation

ii. **Destructive procedures**

- Evisceration with or without implant
- Enucleation with or without implant

iii. **Sac surgery**

- Dacryocystectomy
- Dacryocystorhinostomy
- Probing for congenital obstruction of nasolacrimal duct

iv. **Strabismus surgery**

- Recession and resection procedures on the horizontal recti.

v. **Orbit surgery**

- Incision and drainage via anterior orbitotomy for abscess

vi. **Cyclocryotherapy/Cyclophotocoagulation**

c) 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:

- i. Small incision cataract surgery with or without IOL implantation
 - ii. Intracapsular cataract extraction (second year)
 - iii. Cataract with Phacoemulsification (third year)
 - iv. Secondary AC or PC IOL implantation
 - v. Anterior Vitrectomy/Scleral buckling
 - vi. Intra-vitreous and intra-cameral (anterior chamber) injection techniques and doses of drugs for the same
 - vii. Needs to know the basics of anterior vitrectomy (anterior segment) as well as management of cataract surgery complications
 - viii. Assisting vitrectomy and scleral buckling procedures
- ix. **Ocular surface procedures**
- i. Pterygium excision with modifications
 - ii. Conjunctival cyst excision/foreign body removal
 - iii. Corneal foreign body removal
 - iv. Conjunctival flap/ peritomy
- x. **Glaucoma**
- Trabeculectomy
- Pharmacological modulation of trabeculectomy
- xi. **Corneal**
- i. Repair of corneo - scleral perforations
 - ii. Corneal suture removal
 - iii. Application of glue and bandage contact lens
- xii. **Should have performed/assisted the following microscopic surgeries**
- i. Keratoplasty(Therapeutic and optical)
 - ii. Trabeculotomy
 - iii. Goniotomy

- iv. Glaucoma valve implant surgery
- xiii. **Desirable to be able to perform following laser procedures**
 - i. Yag Capsulotomy
 - ii. Laser iridotomy
 - iii. Focal and panretinal photocoagulation
- xiv. **Should have assisted/knowledge of Keratorefractive procedures**

Surgeries:

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 **early first year**, the post graduate student is given training in preparations of cases for operation, pre-medication and regional anaesthetic blocks, assists the operating surgeon during the operations. In the late first phase PG is trained in surgeries step wise. In the **second year**, the post graduate student trained in routine surgical skills under observation and later independently. In the **third year**, the post graduate student operates independently and operates complicated cases 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.

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
 - i. General biochemistry, biochemistry applicable to ocular function
5. Ocular Microbiology
 - i. 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

1. Basic physics of optics

2. Applied ophthalmic optics
3. Applied optics including optical devices
4. Disorders of Refraction

III. Clinical Ophthalmology

1. Disorders of the lids
2. Disorders of the lacrimal system
3. Disorders of the Conjunctiva
4. Disorders of the Sclera
5. Disorders of the Cornea
6. Disorders of the Uveal Tract
7. Disorders of the Lens
8. Disorders of the Retina
9. Disorders of the Optic Nerve and Visual Pathway
10. Disorders of the Orbit
11. Glaucoma
12. Neuro-ophthalmology
13. Paediatric ophthalmology
14. Ocular involvement in systemic disease
15. Immune ocular disorders
16. Strabismus and Amblyopia
17. Ocular oncology

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 discussions 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

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

8. Rotations: Specialty clinics

The student may rotate in the following subspecialty clinics

- a. Anterior segment and cataract
- b. Glaucoma
- c. Oculoplastics
- d. Paediatric ophthalmology and strabismus
- e. Retina and Uvea

- f. Cornea, Contact lens and low vision
- g. Neuroophthalmology
- h. Refractory 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. Maintenance of log book:** Log books shall be checked and assessed periodically by the faculty members imparting the training.

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently

ASSESSMENT

I. FORMATIVE ASSESSMENT(during the training course)

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 in the expected standards laid down by national/international council.

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.

First theory internal assessment examination should be conducted at the end of first year of post-graduation. Topics should be based on paper I of the final exam portion.

Second theory examination should be conducted at the end of second year of post-graduation. Topics should include paper II and III of final exam portion.

Third examination should be conducted six months prior to final university exams and must be same as it (including theory and practical).

Quarterly 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 (assessment at the end of training)**

The summative examination would be carried out as per the Rules of the University.

POSTGRADUATE MEDICAL EDUCATION REGULATIONS.

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 shall

be 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.

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

Clinical/Practical and oral/viva voce examination

➤ **Clinical**

1 long case

2 short cases with different problems

2 fundus cases

2 refraction cases

➤ **Oral/Viva voce Examination shall be comprehensive enough to test the**

post graduate student's overall knowledge of the subject and shall include:

a. Instruments

b. Pathology specimens

c. Drugs, X-rays, USG/OCT/CT/MRI Scans, etc.

d. Visual fields and other ophthalmic diagnostic charts

| Maximum marks for M.S. Ophthalmology | Theory | Practical | Viva | Grand Total |
|---|---------------|------------------|-------------|--------------------|
| | 400 | 200 | 100 | 700 |

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. Elsevier 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 Paediatric Eye and Systemic disease. Wright, Spiegel and Thompson.
24. Binocular Vision 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.
29. Refractive Surgery. Agarwal A, Agarwal A, Jacob Soosan. Jaypee.
30. LASIK Complications, Prevention and management. Gimbel HV, Penno EEA. Slack Inc.
31. Management of Complications of Refractive Surgery. Alio JL, Azar DT. Springer.
32. Quality of Vision: Essential Optics for the Cataract and Refractive Surgeon. Holladay JT. Slack Inc.
33. Ocular Pharmacology: Havener

34. Anatomy: Wolff 's Anatomy of the Eye and Orbit
35. Physiology: Adler's Physiology of the Eye
36. Textbook of Ophthalmology (2 volumes). Easty DL, Sparrow JM. Oxford, Oxford Medical Publications.
37. The Eye. Basic Sciences in Practice. Forrester JV, Dick AD, McMenamin PG, Lee WR. W B Saunders.
38. A Stereoscopic Atlas of Macular Diseases: Diagnosis and Treatment. Gass, JDM.
39. Neuroophthalmology. Glaser JS. Lipincott Williams & Wilkins. .
40. Clinical Ophthalmic Pathology. Harry J, Misson G. Butterworth/Heinemann.
41. Inherited Retinal Diseases. A Diagnostic Guide. Jimenez Sierra JM, Ogden TE, Van Boemel GB. Mosby.
42. Clinical Ophthalmology. Kanski JJ. Butterworth/Heinemann.
43. ABC of Resuscitation. Colquhoun, M. C., Evans, T. R., Handley, A. J. BMJ Publishing Group.
44. Walsh and Hoyt's Clinical Neuroophthalmology (5 volumes). Miller NR, Newman NJ, Williams and Wilkins.
45. The human eye. Oyster CW Sinauer Associates. Sunderland. Massachusetts
46. Paediatric Ophthalmology. Taylor D. Blackwell Science.
47. Decision Making in Ophthalmology. Van Heuven WAJ, Zwann J. Mosby.
48. Parsons' Diseases of the eye. Sihota and Tandon.
49. Wills Eye Manual
50. International Council of Ophthalmology Residency Curriculum

available at <http://www.icoph.org/>

Journals

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

1. American journal of Ophthalmology
2. British journal of Ophthalmology
3. Indian journal of Ophthalmology
4. Survey of Ophthalmology
5. Cornea

Ophthalmology Journal Websites

1. Acta Ophthalmologica Scandinavica:
<http://www.blackwellpublishing.com/journals/aos>
2. American Journal of Ophthalmology: <http://www.ajo.com>
3. Ophthalmology: <http://www.aao.org>
4. Several sub-specialty journals are available through:
<http://www.ophsource.org>
5. Archives of Ophthalmology: <http://archopht.ama-assn.org/>
6. British Journal of Ophthalmology: www.bjophthalmol.com
7. Canadian Journal of Ophthalmology: <http://www.eyesite.ca>
8. Clinical and Experimental Ophthalmology:
<http://www.blackwellpublishing.com/journals/aos>
9. Current Opinion in Ophthalmology: <http://www.co-ophthalmology.com>
10. European Journal of Ophthalmology: <http://www.eur-j-ophthalmol.com/ejo/>
11. Eye: <http://www.nature.com/eye/>
12. Graefe's Archive for Clinical and Experimental Ophthalmology:
<http://www.springerlink.com>
13. International Ophthalmology Clinics: <http://www.internat->

ophthalmology.com

14. Investigative Ophthalmology and Visual Science: <http://www.iovs.org>
15. Japanese Journal of Ophthalmology: <http://www.springerlink.com>
16. Journal Français d'Ophtalmologie: <http://www.sfo.org>
17. Ophthalmologica: <http://www.karger.com>
18. Transactions of the American Ophthalmological Society:
<http://www.aonline.org>
19. Lippincott Williams and Wilkins: <http://www.lwwonline.com>

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



SDM College of Medical Sciences & Hospital



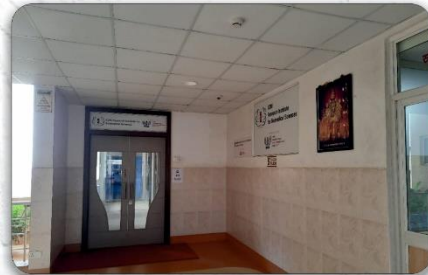
SDM College of Dental Sciences & Hospital



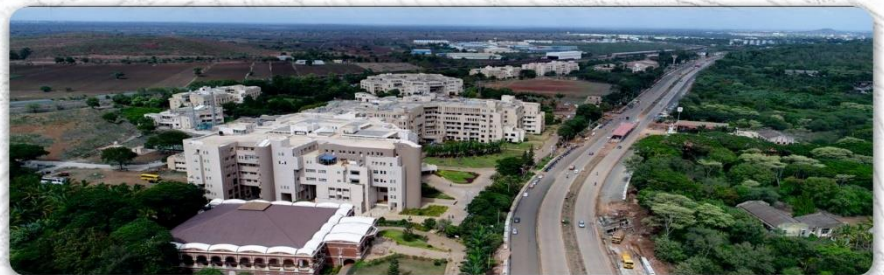
SDM College of Physiotherapy &
SDM Institute of Nursing Sciences



Shri Dharmasthala Manjunatheshwara University



SDM Research Institute for Biomedical Sciences



Panoramic View of Campus