

**Regulations and Curriculum (Modified) for  
Postgraduate Degree Courses in Medical Sciences  
(MD/MS)**

**Amended upto March 2017**

[(As per the Medical Council of India Postgraduate Medical Education  
Regulations, 2000 (Amended upto February, 2016)]

Pre-Clinical, Para-Clinical and Clinical subjects

**Subject: MS OPHTHALMOLOGY**



(Deemed to be University under Section 3 of UGC Act, 1956)

(Placed under Category 'A' by MHRD, Govt. of India, Accredited with 'A' Grade by NAAC)

University Enclave, Deralakatte, Mangaluru – 575 018

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## **VISION**

*To build a humane society through excellence in education and healthcare*

## **MISSION**

*To develop*

*Nitte (Deemed to be University)*

*As a centre of excellence imparting quality education,  
generating competent, skilled manpower to face the scientific and social  
challenges with a high degree of credibility, integrity,  
ethical standards & social concern*



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**No. F.9-13/2007-U.3 (A)**  
**Government of India**  
**Ministry of Human Resource Development**  
**(Department of Higher Education)**  
**U.3(A) Section**

Shastri Bhawan, New Delhi,  
Dated: 4<sup>th</sup> June, 2008

**NOTIFICATION**

1. Whereas the Central Government is empowered under Section 3 of the University Grants Commission (UGC) Act, 1956 to declare, on the advice of the UGC, an Institution of higher learning as a deemed-to-be-university;
2. And whereas, a proposal was received in February, 2007 from Nitte Education Trust, Mangalore, Karnataka seeking grant of status of deemed-to-be-university in the name of Nitte University under Section 3 of the UGC Act, 1956;
3. And whereas, the University Grants Commission has examined the said proposal and vide its communication bearing No. F.26-10/2007(CPP-I/DU) dated the 10th March, 2008 has recommended conferment of status of 'deemed-to-be-university' in the name and style of Nitte University, Mangalore, Karnataka, comprising A.B. Shetty Memorial Institute of Dental Sciences, Mangalore;
4. Now, therefore, in exercise of the powers conferred by section 3 of the UGC Act, 1956, the central Government, on the advice of the University Grants Commission (UGC), hereby declare that Nitte University, Mangalore, Karnataka, comprising A.B. Shetty Memorial Institute of Dental Sciences, Deralakatte, Mangalore, shall be deemed to be a University for the purposes of the aforesaid Act.

Sd/  
**(Sunil Kumar)**  
**Joint Secretary to the Government of India**

(True Extract of the Notification)







**University Grants Commission  
Bahadurshah Zafar Marg  
New Delhi - 110002**

No. F.26-5/2008(CPP-1)

Dated: 24th March, 2009

**OFFICE MEMORANDUM**

1. Whereas the Government of India, Ministry of Human Resource Development, Department of Higher Education vide Notification No. F.9-13/2007-U.3(A) dated 4th June, 2008 declared Nitte University, Mangalore, Karnataka comprising A.B. Shetty Memorial Institute of Dental Sciences, Deralakatte, Mangalore as Deemed to be University under Section 3 of UGC Act, 1956.
2. And whereas now, the University Grants Commission, on the recommendation of an Expert Committee constituted by the Chairman, UGC has agreed for bringing (i) K.S. Hegde Medical Academy, Deralakatte, Mangalore, (ii) Nitte Usha Institute of Nursing Sciences, Deralakatte, Mangalore, (iii) Nitte Gulabi Shetty Memorial Institute of Pharmaceutical Sciences, Deralakatte, Mangalore, (iv) Nitte Institute of Physiotherapy, Deralakatte, Mangalore under the ambit of Nitte University, Deralakatte, Mangalore.

Sd/  
**(K.P. Singh)**  
**Joint Secretary**  
**University Grants Commission**

(True Extract of the Notification)



# Nitte University

(Deemed University under Section 3 of UGC Act 1956)  
Placed under Category 'A' by MHRD, Govt. of India  
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University Enclave, Medical Sciences Complex, Deralakatte, Mangalore – 575 018

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Date: 13<sup>th</sup> May 2009

## **NOTIFICATION**

### **Sub: The Regulations scheme and syllabi for MD/MS Program**

In exercise of the powers conferred under Rule No.R.8 of the MoA, the Academic Council in its 4<sup>th</sup> meeting held on 13-05-2009 under the agenda item no. AC/4-04/09 has been pleased to approve the curriculum and regulation for MD/MS course in K.S. Hegde Medical Academy.

<b>Sl.No</b>	<b>Specialty</b>
1	MD in Anaesthesiology
2	MD in Dermatology, Venereology and Leprosy
3	MD in General Medicine
4	MD in Paediatrics
5	MD in Pathology
6	MD in Radiodiagnosis
7	MS in General Surgery
8	MS in Obstetrics and Gynaecology
9	MS in Ophthalmology
10	MS in Orthopaedics
11	MS in Otorhinolaryngology (ENT)

The Curriculum and Regulation shall come into force from the academic year 2009-10.

Sd/  
(H.V. Sudhaker Nayak)  
Registrar, Nitte University



# Nitte University

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Ref: NU/REG/AC-KSHEMA/2016-17/983

Date: 31-03-2017

## NOTIFICATION

### **Sub: Modified Regulations and Post Graduate Degree Course Curriculum of all clinical and Non-Clinical specialties (MD/MS)**

In exercise of the powers conferred under Rule No.R.9 of the MoA, the Academic Council in its 31<sup>st</sup> meeting held on 14-03-2017 under the agenda item no. AC/3(b)-31/17 has approved the Modified Regulations and Post Graduate Degree Course Curriculum of all clinical and Non-Clinical specialties (MD/MS).

Sl.No	Specialty
1	MD in Anatomy
2	MD in Biochemistry
3	MD in Physiology
4	MD in Forensic Medicine
5	MD in Microbiology
6	MD in Pathology
7	MD in Pharmacology
8	MD in Anaesthesiology
9	MD in Community Medicine
10	MD in Dermatology, Venereology and Leprosy
11	MD in General Medicine
12	MD in Paediatrics
13	MD in Psychiatry
14	MD in Radiodiagnosis
15	MS in General Surgery
16	MS in Obstetrics and Gynaecology
17	MS in Ophthalmology
18	MS in Orthopaedics
19	MS in Otorhinolaryngology (ENT)

Sd/

(M.S. Moodithaya)  
Registrar, Nitte University





(Deemed to be University under section 3 of UGC Act 1956)  
Placed under Category 'A' by MHRD, Govt. of India  
Accredited as 'A' Grade University by NAAC  
Mangalore, Karnataka, India

## **Regulations and Curriculum (Modified) for Postgraduate Degree Courses in Medical Sciences (MD/MS)**

**(Amended upto March 2017)**

[(As per the Medical Council of India Postgraduate Medical Education Regulations, 2000  
(Amended upto February, 2016)]

### **Pre-Clinical, Para-Clinical and Clinical Subjects**

#### **Chapter I**

##### **Preamble:**

K.S. Hegde Medical Academy imparting education and training in medical sciences since 1999, started postgraduate degree courses in medical sciences (MD/MS) specialities in 2006, in order to carry out quality research and prepare specialists teachers in medical sciences. Consequent to becoming a constituent college of Nitte (Deemed to be University), in 2009-10, the new regulations for the postgraduate degree courses were formulated as under:

##### **1. Introduction:**

- 1.1. These regulations shall be called 'Nitte (Deemed to be University) Regulations for Postgraduate Degree Courses in Medical Sciences (MD/MS)' and govern the policies and procedures including selection, admission, imparting of instructions, conduct of examinations, evaluation and certification of candidate's performance and all amendments there to, leading to the award of MD/MS degree. The regulations has come into effect from the academic year 2017-2018.
- 1.2. This set of regulations shall be binding on all the candidates undergoing the said degree programs.
- 1.3. These regulations are in conformance to the Medical Council of India Postgraduate Medical Education Regulations, 2000 (Amended upto February, 2016). These regulations may be modified from time to time as mandated by the statutes of the University and the Medical Council of India (MCI). These provisions shall be applicable to any new specialities that may be introduced from time to time.

- 1.4. This set of regulations may evolve and get refined or updated or amended or modified or changed through appropriate approvals from the Academic Council and the BoM from time to time and shall be binding on all parties concerned including the candidates, faculty, staff, departments, and authorities of the institution.
- 1.5. All disputes arising from this set of regulations shall be addressed to the BoM. The decision of the BoM is final and binding on all parties concerned. Further, any legal disputes arising out of this set of regulations shall be limited to jurisdiction of Courts of Mangalore only.

## 2. Definitions:

Unless the context otherwise requires:

- *BoM* means Board of Management of Nitte (Deemed to be University)
- *BoS* means Board of Studies in Medical Sciences (UG and PG) Pre-clinical, Paraclinical, Clinical, as the case may be
- *Constituent College* means any institution under the ambit of Nitte (Deemed to be University)
- *He* includes both genders he and she; similarly his and/or him, himself includes her, herself as well in all cases
- *Head of the Institution* means the Dean of the College / Institution
- *Institution/College* means K.S. Hegde Medical Academy
- *MCI* means Medical Council of India
- *Regulations* means this set of academic regulations
- *Regulatory Authority* means Authority appointed/constituted by the Central/ State Government/s and statutory bodies to regulate medical education
- *Teaching Hospital* means the Hospital attached to the K.S. Hegde Medical Academy or any other Hospital owned by, or under the management of Nitte (Deemed to be University)
- *University* means Nitte (Deemed to be University)

## 3. Branches of Study:

The following courses of study may be pursued

- 3.1. **MD (Doctor of Medicine)**
  - 3.1.1 Anatomy
  - 3.1.2 Biochemistry
  - 3.1.3 Physiology
  - 3.1.4 Forensic Medicine



- 3.1.5 Microbiology
- 3.1.6 Pathology
- 3.1.7. Pharmacology
- 3.1.8. Anaesthesiology
- 3.1.9. Community Medicine
- 3.1.10. Dermatology, Venereology and Leprosy
- 3.1.11. General Medicine
- 3.1.12. Paediatrics
- 3.1.13. Psychiatry
- 3.1.14. Radiodiagnosis

and such other subjects that shall be introduced by the Institution from time to time with due permission from the MCI.

**3.2. MS (Master of Surgery):**

- 3.2.1. General Surgery
- 3.2.2. Obstetrics and Gynaecology
- 3.2.3. Ophthalmology
- 3.2.4. Orthopaedics
- 3.2.5. Otorhinolaryngology (ENT)

and such other specialties that shall be introduced by the Institution from time to time, with due permission from the MCI.

**4. Duration of the Course:**

The duration of post graduate degree courses in medical sciences (MD/MS) shall be of three academic years, consisting of six terms. Each academic term shall be of six months duration.

**5. Eligibility for Admissions:**

A candidate who has passed MBBS examination from a medical college recognized by the MCI and has completed one year compulsory rotatory internship in a teaching institution recognized by the MCI, and has obtained permanent registration of any state medical council shall be eligible for admission to MD/MS degree course.

The candidate seeking admission will have to secure an eligibility certificate from Nitte (Deemed to be University) by making an application along with the following documents and the prescribed fee:

- a. MBBS pass/degree certificate
- b. Copies of marks cards of all the university examinations
- c. Attempt certificate issued by the Principal of the college

- d. Internship completion certificate
- e. Certificate regarding the recognition of the last studied medical college by the MCI, issued by Dean/Principal of that college
- f. In case internship was done in a non teaching hospital, a certificate of the MCI that the hospital has been recognized for internship
- g. Registration Certificate of any state medical council
- h. Proof of SC/ST as the case may be
- i. Proof of NEET rank

**Note:**

1. A candidate possessing PG Diploma of 2 year duration and duly recognized by MCI is eligible for admission to MD/MS course in the same speciality. The duration of the course for such candidates shall be two years.
2. Foreign nationals and candidates qualified from a foreign university should obtain the temporary registration and permission from the MCI prior to the admission to the MD/MS Program.

**6. Selection of Eligible Candidates:**

Selection to the post graduate degree courses in medical sciences (MD/MS) shall be based on the basis of merit obtained in the National Entrance and Eligibility Test (NEET) conducted by the central government or its authorized agency.

**7. Withdrawal -Temporary and Permanent:****7.1. Temporary:**

- 7.1.1 A candidate who has been admitted to the course may be permitted to withdraw temporarily for a period of six months or more up to one year on the grounds of prolonged illness, grave calamity in the family etc, provided:
  - a. He applies stating the reason for withdrawal with supporting documents and endorsement by parent/guardian;
  - b. The Institution is satisfied that without counting the period of withdrawal the candidate is likely to complete his requirement of the degree within maximum time specified;
  - c. There are no outstanding dues or demands with the Department, library, hostel, Institution etc;
- 7.1.2. The tuition fee for the subsequent year may be collected in advance based on the severity of the case before giving approval for any such temporary withdrawal;
- 7.1.3. Scholarship holders are bound by the appropriate rules applicable;

7.1.4. The decision of the Institution/University regarding withdrawal of a candidate is final and binding.

**7.2. Permanent withdrawal:**

7.2.1 A candidate who withdraws admission before the closing date of admission is eligible for refund of fees paid as per rules of the University;

7.2.2 Once the admission for the year is closed, and if a candidate wants to leave the Institution, he will be permitted to do so and take the Transfer Certificate from the Institution, after remitting all the tuition fees for the remaining years;

7.2.3 Those candidates who have received any scholarship/stipend/other forms of financial assistance from the Institution shall repay all such amounts in addition to those mentioned in the clause above;

7.2.4 The decision of the Institution/University regarding withdrawal of a candidate is final and binding.

**8. Migration:**

Under no circumstance, migration/transfer of a candidate undergoing a post graduate degree course shall be permitted.

**9. Conduct and discipline:**

9.1. Students shall conduct themselves within and outside the premises and the campus of the institution in a manner befitting a student of a professional institution.

**9.2. As per the order of Honorable Supreme Court of India, ragging in any form is considered as a criminal offence and is banned. Any form of ragging will be severely dealt with.**

9.3. The following act of omission and/or commission shall constitute gross violation of the code of conduct and are liable to invoke disciplinary measures:

9.3.1. Ragging as defined and described by the Honorable Supreme Court of India /Government.

9.3.2. Lack of courtesy and decorum, indecent behavior anywhere within or outside the campus.

9.3.3. Willful damage or stealthy removal of any property/belongings of the institution/hostel or of fellow students/citizens.

9.3.4. Possession, consumption or distribution of alcoholic drinks or any kind of drugs of abuse.

9.3.5. Mutilation or unauthorized possession of library books.

- 9.3.6. Noisy or unruly behavior, disturbing studies of fellow students.
  - 9.3.7. Hacking of computer systems (such as entering into other person's domain without prior permission, manipulation and/or damage to the computer hardware or software or any other cyber crimes etc.)
  - 9.3.8. Plagiarism of any nature.
  - 9.3.9. Any other act of gross indiscipline as decided by the institution from time to time.
- 9.4. Commensurate with the gravity of offence, the punishment may be: reprimand, fine, expulsion from the hostel, debarment from an examination, disallowing the use of certain facilities of the institution, rustication for a specific period or even outright expulsion from the institution, or even handing over the case to appropriate law enforcement authorities or the judiciary, as required by the circumstances.
- 9.5. For any offence committed in (i) a hostel (ii) a department or in a classroom and (iii) elsewhere, the Chief Warden, the Head of the Department and the Head of the Institution, respectively, shall have the authority to reprimand or penalize the student.
- 9.6. All cases involving punishment other than reprimand shall be reported to the Head of the Institution.
- 9.7. Cases of adoption of unfair means and/or any malpractice in an examination shall be reported to the Controller of Examinations for taking appropriate action.

## 10. Graduation Requirements:

A student shall be declared eligible for the award of the degree if he has:

- Fulfilled all the degree requirements, including passing the required examination;
- No dues to the University, institution, departments, hostels, library, etc; and
- No disciplinary action pending against him.

The award of the degree must be recommended by the BoM.

## 11. Convocation:

Degrees will be awarded in person to the students who have graduated during the preceding academic year. Degrees will be awarded *in absentia* to such students who are unable to attend the convocation. Students are required to apply for the convocation along with prescribed fee within the specified date and after having satisfactorily completed all degree requirements.

**12. Academic Appeals Board (AAB):**

There shall be an Academic Appeals Boards constituted by the University to receive grievances/ complaints in writing from the students regarding anomaly in award of marks due to perceived bias, victimization, erratic evaluation, etc. and to redress the complaints.

**Constitution:**

Head of the Institution	...	Chairperson
A Professor from a constituent college (Nominated by the Vice-Chancellor)	...	Member
Three faculty members (Nominated by the Vice-Chancellor)	...	Members
Controller of Examinations	...	Member Secretary

The AAB shall interact with the concerned examiner and the student separately, before taking a decision. The recommendation of the AAB shall be communicated to the Vice-Chancellor for further appropriate action.

**Note:**

- The Chairperson may co-opt and/or invite more members, with prior permission of Vice - Chancellor.
- Depending on the prevailing circumstances, the senior most member in the Board shall act as Chairperson instead of the appointed Chairperson.
- The quorum of each meeting shall be minimum of four members.

**13. Attendance and Monitoring Learning Progress:****13.1. Attendance:**

13.1.1. A student pursuing MD/MS course shall work in the concerned department of the institution for the entire period as a full time candidate. No student is permitted to run a clinic/laboratory/ work in any laboratory / institution / hospital / nursing home etc., during the entire period of study. No student should join any other course of study or appear for any other degree examination conducted by this University or any other university in India or abroad during the period of registration.

13.1.2. Each year shall be taken as a unit for the purpose of calculating attendance.

- 13.1.3. A student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, Clinico Pathological, Conferences, case presentations, clinics and lectures during each year as prescribed by the Department / Institution / University and not absent himself without a valid reason.
- 13.1.4. A student is required to attend a minimum of 80% of training during each academic year. Provided further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.
- 13.1.5. Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University examinations.

### 13.2 **Teaching-Learning Activities:**

#### 13.2.1. **Pre-Clinical and Para-Clinical Specialties:**

The teaching and training of the students shall be through lectures, seminars, journal clubs, group discussions, participation in laboratory and experimental work, and involvement in research studies in the concerned speciality and exposure to the ‘applied aspects’ of the subject relevant to the speciality.

#### 13.2.2. **Clinical Specialties:**

The teaching and training of the students shall include graded responsibility in the management and treatment of patients entrusted to their care; participation in seminars, journal clubs, group discussions, clinical meetings, grand rounds, and clinico-pathological conferences; practical training in diagnosis and medical and surgical treatment and training in the basic medical sciences, as well as in allied clinical specialities.

### 13.3 **Monitoring Learning Progress:**

- 13.3.1. A student shall maintain a work diary/ log book and record his participation in the training program such as review of journal, seminars etc. conducted by the department /Institution.
- 13.3.2. The work diary shall be scrutinized and certified by the Guide, Head of the Department and Head of the Institution and presented during university practical/clinical examinations.
- 13.3.3. Special mention may be made of the presentations by the student as well as details of clinical or laboratory procedures, conducted by the student.

13.3.4. The concerned department shall conduct three examinations: One examination each at the end of the first and second year, and the third examination, two to three months before the University examination. These examinations shall include written papers, practical / clinical and viva-voce.

**13.4. Procedure for Defaulters:**

Each department shall have a Committee comprising of Head of the Department, three faculty members (maximum) and the respective Guide. A student whose progress is found to be unsatisfactory will be counseled by the Committee giving chances to improve. If the student continues to be defaulting, the Committee can recommend withholding the student from appearing for the University examinations.

**14. Dissertation/Thesis:**

**14.1. Preparation of Dissertation/Thesis:**

14.1.1. A student is required to carry out a study on a selected research project under the guidance of a recognized Guide. The results of such a study shall be submitted in the form of a dissertation/thesis.

14.1.2. The dissertation/thesis is aimed at training a postgraduate student in research methodology and techniques, medical ethics and medico – legal aspects. It includes identification of a problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

14.1.3. The dissertation/thesis should be written under the following headings in order:

- a. Introduction
- b. Aims and Objectives of the Study
- c. Review of Literature
- d. Materials and Methods
- e. Results
- f. Discussion
- g. Summary and Conclusions
- h. References
- i. Tables
- j. Annexures

- 14.1.4. The written text of dissertation/thesis shall be of not less than 50 pages and shall not exceed 200 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed with double line spacing on one side of the paper (A4 size: 8.27” x 11.69”) and bound properly. Spiral binding should be avoided. A soft copy of the dissertation/thesis should also be submitted.
  - 14.1.5. A Guide shall be a full time postgraduate teacher in the respective department of the college and recognized by MCI/Nitte (Deemed to be University) as a Guide for supervision of dissertation/thesis work. A Co-Guide can be opted wherever required with prior permission of the college and university. The Co-Guide should also be a postgraduate teacher, recognized by MCI/Nitte (Deemed to be University).
  - 14.1.6. He shall submit the synopsis of the study to the University through the Guide, HoD and Head of the Institution. The synopsis shall be submitted within six months of commencement of the course or within the date notified by the University. The synopsis should be vetted by the Guide, Department and approved by the Institutional Ethics Committee before submission to the university.
  - 14.1.7. Once the synopsis is approved and registered by the University, no change in the topic or Guide shall be permitted without the prior approval of the University.
  - 14.1.8. In the event of the registered Guide leaving the Institution or in the event of the death of the Guide, the Guide may be changed with prior permission from the University.
- 14.2. **Submission and Acceptance of Dissertation/Thesis:**
- 14.2.1 The final dissertation/thesis in the prescribed format and certified by the Guide and Co-Guide (if any), Head of the Department and Head of the Institution should be submitted to the University six months before the University examinations or as per the date notified by the University.
  - 14.2.2 A student is eligible to appear for the University theory, practical/clinical, and viva-voce examinations only if his dissertation/thesis has been accepted by the University, after due evaluation, subject to satisfying other conditions mentioned below. (see 15.2.1)



**15. Examinations:****15.1. University Examinations:**

The University examination shall be held at the end of 3 academic years (six academic terms). An academic term shall mean six months training period. The examinations shall consist of dissertation/thesis, theory papers, practical/clinical and viva-voce examinations. The University shall conduct two examinations in an academic year at an interval of not less than four months and not more than six months between the two examinations.

**15.2. Scheme of Examinations:**

The examination shall consist of dissertation/thesis, written paper (theory), practical/ clinical and viva-voce examinations.

**15.2.1. Eligibility to Appear for University Examinations:**

A student who fulfills all of the following conditions shall be permitted to appear for the University examinations.

- A minimum 80% attendance in each academic year;
- Satisfactory completion of the requirements of the course certified by Head of the Department and Head of the Institution;
- Acceptance of the thesis/ dissertation by the University;
- Presented one poster, read one paper at a national/state conference and presented one research paper which should have been published/accepted for publication/sent for publication during the period of his postgraduate studies; and
- Fulfills any other requirement that may be prescribed by the University from time to time.

15.2.2. A student whose dissertation/thesis has been accepted by the examiners, but who is declared to have failed in the University examination will be permitted to reappear for the subsequent examination without having to prepare a new dissertation/ thesis.

15.2.3. In case the dissertation/thesis of student is rejected, the authorities shall give reasons thereof and suggestion for the improvement of the same and the dissertation/ thesis thus improved will have to be re-submitted to the University for evaluation and be accepted before appearing for the university examination.

**15.2.4. Theory Papers:**

- There shall be four theory papers each of three hours duration and each paper carrying 100 marks.
- Paper I, II III and IV shall consist of two long essay questions of 20 marks each and six short essay questions of 10 marks each.

**Note:**

Questions on recent advances may be asked in any or all the papers.

The distribution of topics in each paper is given under the respective speciality

**15.2.5. Practical Examination (Pre-Clinical and Para- Clinical Specialities):**

The total marks for practical examination shall be 200 marks. Practical examination in subjects in basic medical sciences specialities shall be conducted to test the knowledge and competence of the student for making valid and relevant observations based on the experimental/ laboratory studies and his ability to perform such studies as are relevant to his speciality.

**15.2.6. Clinical Examination (Clinical specialities):**

The total marks for clinical examination shall be 200 marks. Clinical examination in clinical specialities shall be conducted to test the knowledge and competence of the student for undertaking independent work as a specialist/teacher, for which students shall examine a minimum of one long case and two short cases.

**15.2.7. Viva -Voce Examination:**

Viva -Voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100 marks and the division of marks shall be as under:

Examination of all components of the syllabus:	80 marks
Pedagogy:	20 marks

**16. Criteria for Pass:**

To pass in the University examinations, a student shall appear for all theory papers scoring a minimum of 40% in each paper and secure a minimum of 50% of total marks allotted for theory subjects (i.e. 200 marks out of 400) in aggregate and 50% marks allotted in practical/ clinical and viva voce put together (minimum of 150 marks out of 300 marks) in aggregate.

16.1.1. A student securing less than 50% marks shall be declared to have failed in the examination. The reasons for failing a student shall be documented in the case sheet and signed by all Examiners. Failed students may reappear in any subsequent examination as notified by the University.

**17. Declaration of Class:**

Class will be awarded only to those students who pass the entire examination in the first attempt and minimum duration (two years / three years, as the case may be) and the class shall be awarded as follows:

- 75% and above: Passed with Distinction
- 50% and above but below 75%: Pass class

A student who passes the examinations in more than one attempt shall be declared as 'Pass' irrespective of the percentage of marks secured.

**18. Supplementary Examination:**

Supplementary examination shall be conducted by the University for the benefit of unsuccessful students which will be held within six months from the date of announcement of results.

A student detained for lack of attendance will be barred from appearing for the supplementary examinations unless he has fulfilled the requirement of attendance.

**19. Award of Merit Certificates:**

Merit Certificate is awarded only if a student passes with 75% and above in the first attempt.

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## Chapter II

### **GOALS AND GENERAL OBJECTIVES OF POSTGRADUATE MEDICAL EDUCATION COURSE**

#### **1. Goal**

The goal of postgraduate medical education shall be to produce competent specialists and/or medical teachers:

- i. who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy;
- ii. who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. who shall be aware of the contemporary advance and developments in the discipline concerned;
- iv. who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology; and
- v. who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

#### **2. General Objectives of Post-Graduate Training:**

At the end of the postgraduate training in the discipline concerned the student shall be able to:

- i. Recognize the importance to the concerned specialty in the context of the health needs of the community and the national priorities in the health sector;
- ii. Practice the specialty concerned ethically and in step with the principles of primary health care;
- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty;
- iv. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and promotive measures strategies;
- v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations;

- vi. Plan and advise measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality;
- vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation;
- viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations;
- ix. Play the assigned role in the implementation of national health programs effectively and responsibly;
- x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation;
- xi. Develop skills as a self-directed learner, recognize continuing education needs and select and use appropriate learning resources;
- xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature;
- xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers; and
- xiv. Function as an effective leader of a health team engaged in health care, research or training;

### **3. Components of the Postgraduate Curriculum**

The major components of the postgraduate curriculum shall be:

- Theoretical knowledge
- Practical and clinical skills
- Writing dissertation/research articles
- Attitudes including communication skills
- Training in research methodology, medical ethics and medico-legal aspects

*[Source: The Medical Council of India Postgraduate Medical Education Regulations, 2000 (Amended upto February, 2016)]*

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## **Chapter III**

### **Curriculum for**

# **MS Ophthalmology**

#### **Programme Outcomes:**

*At the end of the program, graduates will be able to...*

1. Elicit and record a history, perform a complete ophthalmic examination and select appropriate investigations relevant to the disease identification and its management
2. Interpret the available clinical data in form of corneal topography, fields and OCT, to arrive at differential diagnosis & initiate appropriate management
3. Prescribe and safely administer appropriate treatment based on the scientific rationale, appropriate dosage with treatment duration and its cost-effective
4. Conduct an eye camp along the guidelines of NPCB in order to identify common ophthalmic disorders and refer them to base hospital for further management
5. Perform independently a manual small incision cataract surgery
6. Identify and refer patients who need specialized tertiary case
7. Communicate effectively with patients and their bystanders regarding the nature of disease, its management and outcomes
8. Diagnose and manage common ophthalmic emergencies like chemical burns, trauma, acute congestive glaucoma and central retinal artery occlusion
9. Diagnose ophthalmic manifestations of systemic diseases like diabetes and hypertension and refer to an appropriate tertiary control for further management
10. Diagnose and manage common causes of acute red eye
11. Recognize and manage medico-legal and ethical issues in day to day practice
12. Perform a corneal or conjunctival foreign body removal safely
13. Demonstrate interest in improving existing knowledge/skill and also to acquire new knowledge/skill, thereby improving professional competency
14. Demonstrate competence in basic concepts of research methodology and epidemiology, and ability to critically analyze relevant published research literature.

### 15. Practice profession with integrity, responsibility and ethically

**Goal:** The Master’s Course in Ophthalmology is a 3- year integrated course, after satisfactory completion of which the candidate shall be able to practice ophthalmology competently and safely in the community that he /she serves

#### **Objectives**

With the knowledge and skills developed at the completion of the course, the candidate shall be able to:

- i Offer to the community, the current quality of “standard of care” in ophthalmic diagnosis as well as therapeutics, medical or surgical, for common as well as referred conditions.
- ii periodically self assess his or her performance and keep abreast with ongoing advances in the field and apply the same in his /her practice.
- iii be aware of his or her own limitations to the application of the speciality in situations which warrant referral to major centres or individuals more qualified to treat.
- iv apply research and epidemiological methods during his/her practice. The candidate shall be able to present or publish work done by him/her.
- v contribute as an individual/or in a group or institution towards the fulfillment of national objectives with regard to prevention of blindness.
- vi 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.
- vii effectively communicate with colleagues

### **SYLLABUS**

#### **1. Basic Sciences:**

- a. Orbital and Ocular Anatomy
  - i. Gross anatomy
  - ii. Histology
- b. Ocular Physiology
- c. Pathology
  - i. General Pathology
  - ii. Ocular pathology: Gross pathology, Histopathology.
- d. Biochemistry: General biochemistry, Biochemistry applicable to ocular function.
- e. Microbiology



- i. General Microbiology
- ii. Specific microbiology applicable to the eye
- iii. Immunology with particular reference to ocular immunology
- f. Geometric and ophthalmic optics
  - i. Basic physical optics
  - ii. Ophthalmic optics
  - iii. Applied optics including optics relating to ophthalmic devices

## **2. Clinical Ophthalmology:**

- a. Disorders of Refraction
- b. Disorders of the Lids
- c. Disorders of the Lacrimal System
- d. Disorders of the Conjunctiva
- e. Disorders of the Sclera
- f. Disorders of the Cornea
- g. Disorders of the Ureal Tract
- h. Disorders of the Lens
- i. Disorders of the Retina
- j. Disorders of the optic Nerve and Visual Pathway
- k. Disorders of the Orbit
- l. Glaucoma
- m. Neuro ophthalmology
- n. Paediatric Ophthalmology
- o. Systemic ophthalmology (ocular involvement in Systemic disease)
- p. Immune ocular disorders
- q. Strabismus and Amblyopia

## **Diagnostic Skills – Instrumentation**

### **1. Tonometry**

- a. Applanation
- b. Indentation (Commonly Schiotz)

### **2. Assessment of Epiphora**

- a. Jone's dye test
- b. Syringing – performance and Interpretation

### **3. Dry Eye Evaluation**

- a. Schirmer Test

- b. Rose Bengal staining
  - c. Tear film breakup time
  - d. Tear meniscus evaluation
- 4. Corneal Ulceration**
- a. Taking a corneal scrapings
  - b. Inoculation into media
  - c. Evaluation of Gram's stain
  - d. Evaluation of KOH preparation
  - e. Corneal wedge biopsy
- 5. Direct Ophthalmoscopy**
- a. Distant direct
  - b. Retinal evaluation
  - c. Use of filters provided
- 6. Indirect Ophthalmoscopy**
- a. Scleral depression
  - b. Fundus drawing capability
  - c. Use of filters provided
- 6. Slit Lamp Examination**
- a. Diffuse examination
  - b. Focal examination
  - c. Retroillumination – direct and indirect
  - d. Sclerotic Scatter
  - e. Specular reflection
  - f. Staining modalities and interpretation
- 8. Slit Lamp Accessories**
- a. Goldman's applanation
  - b. Gonioscopy
  - c. Single mirror gonioscope
  - d. Gonioprism
  - e. Grading of the angle
  - f. Testing for occludability
  - g. Indentation gonioscopy
  - h. 3 – mirror examination (including fundus)

- i. 78, D/90-D examination
  - j. Hruby lens examination
  - k. Optical pachymetry
  - l. Slit lamp photography
- 9. Colour Vision Evaluation**
- a. Ishihara pseudoisochromatic plates
  - b. Other tests including: Farnsworth – Munsell 100 hue or 15 – hue tests, Holmgren’s wools, Edridge-Green lantern
- 10. Use of Amsler’s Charting:** Instructing in the use of and interpreting the chart
- 11. Corneal Topography:** Interpretation
- 12. Specular Microscopy:** Interpretation
- 13. Keratometry:** Performance and interpretation, Diagnosis of situations such as keratoconus
- 14. Fundus Photography and Fundus Fluorescein Angiography (FFA, FAG)**
- a. Doing and evaluating stereoscopic fundus photographs
  - b. Performance of and interpretations of FFA
  - c. Performance of indirect fluorescein angiography
- 15. Refraction**
- Retinoscopy - Streak Retinoscopy, Use of trial set, Use of Jackson’s cross-cylinder, duochrome test, Subjective and objective refraction
- 16. Autorefractometry:** Use of and interpretation of autorefractometer
- 17. Diagnosis and Assessment of Squint**
- a. Ocular position and motility examination
  - b. Versions, ductions, and vergences
  - c. Convergence facility estimation
  - d. Cover /uncover /Alternate cover test
  - e. Use of prism bars or free prisms in assessment of squint
  - f. Use of synaptophore/major amblyoscope
  - g. Use of Bagolini’s straiated glasses/ red filers /Maddox rod
  - h. Use of Worth’s four dot test

- i. Use of minor amblyoscope
- j. Use and interpretation of the Hess chart/Lees' screen
- k. Performance and interpretation of diplopia charting
- l. Diagnosis of amblyopia

**18. Exophthalmometry**

- a. Use Hertel's / Luedde's / other exophthalmometer
- b. Measurement of proptosis or exophthalmos

**19. Use and Evaluation of Ophthalmic Ultrasound**

- a. A- scan ultrasound and biometry
- b. B- scan ultrasound: performance and interpretation

**20. Interpretation of Perimetry**

- a. Tangent screen
- b. Goldman perimeter interpretation
- c. Static computerized perimetry: Interpretation of commonly managed problems

**21. Radiology**

- a. Interpretation of plain skull films: PA-20 (Caldwell's view), PNS (Water's view), Lateral - Submentovertical, Optic canal view, Localisation of intra ocular and intra orbital FBs
- b. Interpretations of contrast studies: performance and interpretation of dacryocystograms, Performance and interpretations of orbital venograms, Interpretation of carotid angiograms
- c. Interpretation of CT Scans and MRI scans: Orbital CT interpretation and orbital MRI evaluation, Brain CT interpretation

**22. Module on Gender Equity****Specific learning outcomes:**

At the end of each unit students will be able to

1. Recognize the causes for the current status of women in our society.
2. Discuss the need for women empowerment and related social issues.
3. Summarize the status of women in primary, secondary and higher education in India.
4. Identify the problems faced by women in various forms of occupation

5. Outline the laws governing women rights in India.

**SYLLABUS: (10 hours)**

- Status of Women: Demographic profile of women related statistics
- Women empowerment: concept, need, Issues related to women, programs for girl child, violence against women, laws protecting women rights, case profile studies.
- Importance of women education: School drop-out rate, causes, prevention and steps taken. The access to higher education. Case profile studies.
- Women and work: Problems faced by working women, Maternity leave, POCSO act. Case profile study of a working woman.

**Suggested Teaching-Learning methods**

- Lectures / group discussions
- Self-directed learning and Assignments

**23. Module on Human Health and Environment**

**Specific learning outcomes:**

At the end of each unit students will be able to

1. Describe the principles of environmental science
2. Define the structure, function and features of ecosystem.
3. Summarize the importance of healthy air, water and soil.
4. Identify the types of pollution, sources, causes and impact on human health.
5. List common aeroallergens and pollution related diseases
6. Describe biological, chemical and physical hazards as determinants of health and disease in humans

**SYLLABUS (10 hours):**

**Introduction:** Health and Environment, atmosphere, hydrosphere, lithosphere and biosphere.

**Ecosystem:** Structure, functions and its features. Weather and climate change: Global warming and greenhouse effect.

**Pollution:** Classification of pollution, its sources, cause and their impacts. Types of pollutants and its fate: Eutrophication. Water and soil- types and sources; sewage and waste water treatment and recycling; Noise pollution and its impact on human health.

**Environmental hazards:** Biological, chemical and physical hazard. Toxic chemicals in the environment: air, water and soil

**Clean air:** Pesticides and carcinogens in the air, Microflora of atmosphere, Identification of aeroallergens, Air pollution related diseases and allergies.

**Environmental Ethics and Global imperatives:** Legal/environmental policy and different control measures.

**Suggested Teaching-Learning methods**

- Lectures / group discussions
- Self-directed learning and Assignments

**Skills to be Acquired**

- O = Washed and Observed
- A = Assisted the operating Surgeon
- PA = Performed with Assistance
- PI = Performed Independently

Procedure	Number			
	O	A	PA	PI
<b>1. Operating theatre</b>				
<b>a. Anaesthesia:</b>				
i. Retrobulabar anaesthesia	-	-	20	20
ii. Peribulabar anaesthesia	-	-	20	20
iii. Parabulabar anaesthesia	√	-	-	-
iv. Facial blocks	-	-	-	-
• O'Brein	-	-	-	20
• Van Lint and Modifications	-	-	-	5
v. Frontal blocks	-	-	-	2
vi. Infra orbital blocks	-	-	-	1
vii. Blocks for sac surgery	-	-	-	5
<b>b. Magnification:</b>				
i. Operating microscope familiarity	-	-	-	√

ii. Operating loupe	-	-	-	√
<b>c. Lid Surgery:</b>				
i. Tarsorrhaphy	-	-	-	10
ii. Ectropion and entropion procedures	-	-	-	2
iii. Ptosis surgery	-	2	-	-
iv. Lid repair following trauma & surgical excision of lid for tumours etc	-	-	2	-
v. Epilation, electrolysis, cryotherapy etc	-	-	-	10
<b>d. Destructive Procedures:</b>				
i. Evisceration with or without implant	-	-	-	3
ii. Enucleation with or without implant	-	-	-	5
iii. modified enucleation procedures for intraocular tumours	√	-	-	-
<b>Procedure</b>	<b>O</b>	<b>A</b>	<b>PA</b>	<b>PI</b>
<b>e. Sac Surgery</b>	-	-	-	2
i. Dacryocystectomy	-	-	-	3
ii. Dacryocystorhinostomy	20	20	2	-
iii. Probing for congenital obstruction of nasolacrimal duct	-	-	1	-
<b>f. Extraocular Muscle Surgery</b>				
i. Recession and resection procedures on the horizontal recti	-	-	2	-
<b>g. Cataract Surgery</b>				
i. Standard ECCE with or without IOL implantation	-	-	-	10
ii. Small incision ECCE with or without IOL implantation	√	-	-	-
iii. Membranectomy	√	-	-	-
iv. Secondary AC or PC IOL implantation	√	-	-	-
v. Phacoemulsification	√	-	-	-
vi. Intra capsular cataract extraction	√	-	-	-
vii. Vectis extraction	√	-	-	-
<b>h. Retinal Surgery</b>				
i. Needs to know how to assist in external procedures such as buckling		1	-	-
ii. Prophylactic cryotherapy	√	-	-	-
<b>i. Orbit Surgery</b>				
i. Anterior orbitotomy for diagnostics and therapy	√	-	-	-

ii. Lateral orbitotomy for tumours	√	-	-	-
iii. Incision and drainage via anterior orbitotomy for abscess	-	1	-	-
iv. Exenteration	√	-	-	-
v. Fine needle aspiration biopsy of orbital disease (if experienced pathologist is available)	√	-	-	-
<b>j. Vitrectomy</b>				
i. Intra vitreal and intra cameral (anterior chamber) injection techniques and particularly for endophthalmitis management.	-	-	2	-

<b>Procedure</b>	<b>O</b>	<b>A</b>	<b>PA</b>	<b>PI</b>
ii. Needs to know the basics of open sky vitrectomy (anterior segment) as management of cataract surgery complication	10	10	2	2
iii. Automated vitrectomy	-	-	-	-
iv. Assist vitrectomy surgeon	√	-	√	-
<b>k. Keratoplasty</b>				
i. Assisting or doing penetrating keratoplasty (therapeutic, optical)	-	-	10	-
ii. Lamellar keratectomy	√	-	-	-
<b>l. Glaucoma surgery</b>				
i. Trabeculectomy	√	-	-	-
ii. Pharmacological modifications of trabeculectomy	√	-	-	-
iii. Goniotomy/trabcanlotomy	√	-	-	-
iv. Cyclocryotherapy and other cyclodestructive procedures	-	-	-	2
<b>m. Procedures</b>				
i. Pterygium excision with pharmacological modifications	-	-	2	2
ii. Conjunctival grafting	-	-	5	2
iii. Biopsy of cornea and conjunctiva	-	-	-	10



Procedure	Number			
	O	A	PA	PI
<b>2. Out patient:</b>				
<b>a. Manual diagnostic procedures such as syringing, corneal scraping, conjunctival swab collection, conjunctival scraping etc.</b>	-	-	-	10
<b>b. Conjunctival and corneal foreign body removal on the slit lamp</b>	-	-	-	10
<b>c. Chalazion incision and curettage</b>	-	-	-	10
<b>d. Biopsy of small lid and tumours</b>	-	-	3	
<b>e. Suture removal skin, conjunctival, corneal, and corneoscleral</b>	-	-	-	5
<b>f. Subconjunctival injection</b>	-	-	-	10
<b>g. Posterior Sub-Tenon's injections</b>	-	-	-	5
<b>h. Artificial eye fitting</b>	-	-	-	5
<b>i. Laser procedures</b>	-	-	-	-
i. Laser capsulotomy	√	-	-	-
ii. Laser iridotomy	√	-	-	-
iii. Laser trabeculoplasty	√	-	-	-
iv. Panretinal photocoagulation	√	-	-	-
v. Focal photocoagulation	√	-	-	-

### Other Skills Required

- a Contact Lenses:** Assessment, RGP fitting, Soft lens fitting, Troubleshooting
- b Subjective Correction of Refraction:** Techniques of subjective correction, Knowledge of basic optical devices available and relative advantages and disadvantages of each.
- c Low Vision Aids:** The basics of fitting with knowledge of availability and cost
- d Community Ophthalmology:** Ability to organize institutional screening, Ability to organize peripheral eye screening camps, Knowledge and ability to execute guidelines of National programme for prevention of Blindness.

### Training Schedule

#### I year:

#### 1. Theoretical Knowledge

- a. Basic sciences
- b. Clinical ophthalmology

2. **Clinical Examination and Diagnostics**
  - a. The basics of history taking, correct methods of examination and recording have to be learnt during this time
  - b. Clinical and surgical decision making is encouraged under supervision
3. **Surgery**

Extra ocular surgery including - Destructive procedures must have been done independently with or without assistance, Local Anaesthesia (retrobulbar and peribulbar blocks), Subconjunctival injections
4. **Assisting for Squint Surgery**
5. **Assisting for lid surgery. Tarsorrhaphy should be performed independently as also the simpler oculoplastic procedures.**
6. **Chalazion and Pterygium surgery.**
7. **Lid and corneal foreign body removal, suture removal on the slit lamp etc.**

At the end of the first year, the student should have participated as assistant in most of the intra ocular procedures as an assistant.
8. **Cataract Surgery**

Cataract surgery should be approached in stages, emphasis to be given on microscopic surgery, At the end of the first year, the student should be able to do standard extracapsular cataract extraction at least under guidance.

## II year

1. **Theoretical Knowledge:** a. Clinical ophthalmology
2. **Clinical Examination and Diagnostics**

Student should take diagnostic investigational and therapeutic decisions on his / own. He should be able to manage most of the common cases that arise, without guidance.
3. **Diagnostics**

The student should be conversant and at ease with most if not all the diagnostic procedure.

**4. Surgical Skills**

At the end of the second year, the student should be capable of operating, without assistance. but under supervision, all varieties of cataract except congenital cataract. He should also know the management of cataract induced complications and cataract surgical complications (management of vitreous loss).

He should have performed the basic antiglaucoma procedures such as trabeculectomy either with assistance or under supervision

Extra ocular surgery such as squint surgery could be performed with assistance. In addition, lacrimal sac surgery such as dacryocystectomy and dacryocystorhinostomy should be possible with assistance or under supervision.

In addition, he should have assisted in the other surgery such as retinal surgery, vitrectomy, orbit surgery, advanced oculoplastic surgery etc.

**5. Conferences and Workshops**

The students should have attended one or two regional workshops and one national conference and presented a paper.

**III year:****1. Theoretical Knowledge:**

Clinical ophthalmology

**2. Clinical Examination and Diagnostics**

Should be conversant with all aspects of clinical examination and decision making.

Independent decision making and investigational and management freedom should be given at this stage for the more usual situations; However, complex cases could be discussed with consultant and degree of freedom of decision making is left to the Consultant's discretion.

**3. Surgical Skills**

- a. Routine skills are honed during this period.
- b. Cataract surgery should be done independently without supervision or assistance.
- c. Antiglaucoma surgery may be done;
- d. Can assist other procedures such as Retinal surgery, orbit surgery etc.

**4. Conferences and Workshops**

The candidate by this time should have attended at least one national conference. He should be given time off to attend regional workshops

and conferences particularly those dealing with the state of art.

#### **5. Rotation and Posting in Other Departments**

For an MS student, optional rotation postings to allied departments would include Plastic Surgery, Neurology, Neurosurgery, Intensive Care, ENT

However, posting to these allied specialities would depend upon the head of department's discretion. The total duration of posting should not exceed 4 months.

#### **Teaching - Learning Activities**

**Clinical Case Discussions:** Every effort should be made to include as wide a variety of cases as possible over two years with multiple repetitions.

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

Case presentation at other in-hospital multidisciplinary may be done.

**Seminars/Symposia:** Shall be conducted once a week. Each student shall present at least four seminar in a year and a total of 12 seminars in 3 years.

**Journal Clubs:** Shall be conducted once a week. Each student shall present at least four seminar in a year and a total of 12 journal clubs in 3 years.

#### **Clinical Pathological Meetings**

#### **Didactic and Integrated**

#### **Lectures**

#### **Scheme of Examination (Summative Assessment):**

M.S. (Ophthalmology) degree examination shall be held at the end of three academic years and shall consist of dissertation/thesis, written papers (Theory), clinical and viva voce.

#### **Note:**

Satisfying all the pre requisites as indicated in Chapter 1 is a must to appear for the University examination. (See 15.2.1 in chapter I)

#### **Theory:**

#### **Total 400 Marks**

Written examination shall consist of four question papers each of 100 marks and three hours duration. Each paper shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks.

The distribution of topics for each paper shall be as follows:

<b>Paper I:</b>	100 Marks
1. Basic Sciences	
a. Anatomy of the eye and orbit	
b. Ocular physiology	
c. Ophthalmic pathology	
d. Microbiology and Immunology	
e. Biochemistry relevant to ophthalmology	
f. Geometric and ophthalmic optics	
<b>Paper II:</b>	100 Marks
1. Disorders of Refraction	
2. Concomitant Strabismus and Amblyopia	
3. Disorders of the Sclera	
4. Disorders of the Uvea	
5. Immune ocular disorders	
6. Disorders of the Cornea	
7. Disorders of the Conjunctiva	
<b>Paper III:</b>	100 Marks
1. Disorders of the Orbit	
2. Disorders of the lids	
3. Disorders of the Lacrimal system	
4. Neuroophthalmology	
5. Paediatric ophthalmology	
<b>Paper IV: (Including Recent Advances)</b>	100 Marks
1. Glaucoma	
2. Systemic ophthalmology	
3. Disorders of the Retina	
4. Disorders of the Lens	
5. Community ophthalmology	
6. Ocular Pharmacology	

**Total**

**400 Marks**

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**Note:**

- Strict division of topics may not be possible and some overlapping is inevitable.
- Questions on recent advances may be asked in any or all the papers.

<b>Clinicals</b>	<b>Total 200 Marks</b>		
Long case	- One	50 Marks	
i. Neuro ophthalmology			
ii. Proptosis			
iii. Sclerokeratouveitis			
iv. Uveitis with complications			
v. Lens induced complications,			
vi. Glaucoma			
Short cases	- Two	25 Marks	
Fundus cases	- Two	25 Marks	
i. Rhegmatogenous retinal detachment			
ii. Diabetic retinopathy, background and proliferative			
iii. Vasculitis			
iv. Tractional RD.			
Hypertensive retinopathy and combination of the same			
with DR Mass lesions			
High myopia with degeneration			
Coloboma choroids, simple or with			
detachment Posterior uveitis, retinitis etc.			
Pigmentary Retinopathy			
Refraction:	- Two	25 Marks	
<b>Total</b>		<b>200 Marks</b>	
<b>Viva – Voce and Pedagogy</b>		<b>100 Marks</b>	
<b>Viva – Voce:</b> The Viva-Voce is aimed at testing the student’s		80 Marks	
comprehension, analytical approach, expression and interpretation			
of data, case reports etc. The Viva-Voce also includes all components			
of the syllabus, and discussion on dissertation.			
<b>Pedagogy:</b> Demonstration of teaching skills / techniques		20 Marks	
<b>Total</b>		<b>100 Marks</b>	
<b>Theory</b>	<b>Clinical</b>	<b>Viva-voce</b>	<b>Total</b>
400 Marks	200 Marks	100 Marks	700 Marks

**Recommended Books and Journals (Latest Editions)****Books**

1. Duane's System of Ophthalmology
2. Jakobie's Series
3. Peyman's Series
4. Duke-Elder's System of Ophthalmology
5. American Academy Series
6. Podos and Yanoff Series
7. Jack Kanski: Clinical Ophthalmology
8. Cornea  
Krachmer, Holland and Mannis Smolin and Thoft Grayson  
Kaufman and Leibowitz
9. Glaucoma  
Bruce Shields Text Book of Glaucoma  
Krupin and Shields Series on Glaucoma  
Becker and Schaeffer's Text Book of Glaucoma Anderson's  
Computerized Perimetry Harrington's Text Book of Perimetry  
Leiberman and Drake: Computerized perimetry
10. Retinal disease: Stephen Ryan's Retina  
Ron Michel: Retinal Detachment Steve Charles:  
Basic Vitrectomy
11. Ultra Sound:  
Sandra Byrne and Ronald Green: Ophthalmic Ultrasound Shamma's atlas
12. Uvea:
  - a. Nussenblatt and Palestine
  - b. Smith and Nozik
13. Neuroophthalmology:
  - a. Walsh and Hoyt
14. Orbital diseases:
  - a. Rootman's diseases of the orbit
  - b. Jakobiec and Snow - Diseases of the orbit
15. Tumours:

- a. Jerry Shields - Diagnosis and management of orbital tumours
16. Strabismus:
    - a. Gunter von Noorden
    - b. Mein and Trimble
  17. Ophthalmic Pathology:
    - a. Yanoff and Fine
    - b. Zimmerman
  18. Pharmacology:
    - a. Havener
  19. Anatomy:
    - a. Wolff
    - b. Snell's
  20. Physiology:
    - a. Adler's Physiology of the Eye
  21. Biochemistry:
    - a. Standard text books
  22. Immunology:
    - a. Ocular immunology
  23. Paediatric ophthalmology
    - a. Kenneth Wright
  24. Refraction:
    - a. Duke Elder's practice of refraction
    - b. Elkington and Frank
  - 25. Recommended Books for Module on Gender Equity**
    1. Teacher, Law. Gender Sensitivity and Discrimination Against Women. Retrieved from <https://www.google.co.in/?vref=1>
    2. Siddiqi, F.E. & Ranganathan, S. Handbook on Women and Human Rights: A guide for Social Activists. (Part-I). New Delhi: Kanishka Publishers.
    3. Goel, S.L. Population Policy and Family Welfare. New Delhi: Deep and Deep Publications.
    4. Carole Brugeille and Sylvie Cromer Promoting gender equity through text books- A methodical guide. Publ: United Nations Educational, Scientific and Cultural Organization (UNESCO), Paris



**26. Recommended Books for Module on Human Health and Environment**

1. Text Book of Environmental Chemistry & Pollution Control, S. S. Dara and D. D. Mishra; S. Chand and Company Ltd, ISBN: 9788121908832.
2. Environmental Pollution: Health and Toxicology, S.V.S. Rana; Narosa Publishing House, ISBN: 9788173199141.
3. Environmental Chemistry: Pollution and Remedial Perspective, A.V. Salker; Narosa Publishing House, ISBN: 9788184875935.
4. Wastewater treatment: Concepts and Design Approach, G.L. Karia, and R.A. Christian; PHI Learning Pvt. Ltd, ISBN: 9788120347359.
5. Pollutants, Human Health and the Environment: A Risk Based Approach, J. A. Plant, N. Voulvoulis, K. V. Ragnarsdottir; Wiley-Blackwell, ISBN: 978-0-470-74261-7.
6. Environmental Science: A Global Concern, P.C. William and A. C. Mary; McGraw Hill Education, USA, ISBN: 978-9339221263.
7. Pollution: Causes, Effects and Control, R.M. Harrison; Royal Society of Chemistry, UK, ISBN: 0854046216



## ANNEXURES

### Check List No. 1

### K S Hegde Medical Academy

A Constituent College of NITTE (Deemed to be University)

### Evaluation of Seminar Presentations

**Name of the Student:**

**Date:**

**Topic:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of preparation					
4.	Clarity of presentation					
5.	Understanding of subject					
6.	Ability to answer questions					
7.	Time scheduling					
8.	Appropriate use of audio-visual aids					
9.	Overall Performance					
<b>Remarks:</b>						

**Name & Signature of Faculty:** .....



**Check List No. 2**
**K S Hegde Medical Academy**

A Constituent College of NITTE (Deemed to be University)

**Evaluation of Journal Review Presentations**
**Name of the Student:**
**Date:**
**Title of the Paper:**
**Journal Details:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope and objectives of the paper by the student					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper/subject					
6.	Audio -Visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9	Overall Performance					

**Remarks:**
**Name & Signature of Faculty:** .....



**Check List No. 3**
**K S Hegde Medical Academy**

A Constituent College of NITTE (Deemed to be University)

**Evaluation of Clinical Presentations**
**Name of the Student:**
**Date:**
**Case Details:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Whether any major signs missed or misinterpreted					
9.	Diagnosis: Whether it follows logically from history and findings					
10.	Investigations required					
	• Complete list					
	• Relevant order					
	• Interpretation of investigation					
11.	Ability of react to questioning whether it follows logically from history and findings					
12.	Ability to defend diagnosis					
13.	Ability to justify differential diagnosis					
Overall Performance						
<b>Remarks:</b>						

**Name & Signature of Faculty:** .....





**Check List No. 4**
**K S Hegde Medical Academy**

A Constituent College of NITTE (Deemed to be University)

**Evaluation of Clinical Work in Ward/OPD**

(To be completed once in three months by respective Unit Head including posting in other departments)

**Name of the Student:**
**Date:**
**Name of the Unit Head:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work- up					
7.	Bedside manners					
8.	Rapport with patients					
9.	Counseling patient's relatives for blood donation or postmortem and case follow- up					
10.	Overall quality of ward work					

**Remarks:**
**Signature of Unit Head: .....**



**Check List No. 5**
**K S Hegde Medical Academy**

A Constituent College of NITTE (Deemed to be University)

**Evaluation of Teaching Skill Practice**

<b>Name of the Student:</b>		<b>Date:</b>	
<b>Topic:</b>			
<b>Sl. No.</b>	<b>Points to be Observed</b>	<b>Strong Point</b>	<b>Weak Point</b>
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	Introduction		
4.	Sequence of ideas		
5.	Use of practical examples and / or illustration		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effective of the talk		
13.	Uses A-V aids appropriately		
<b>Remarks:</b>			

**Name & Signature of faculty: .....**



**Check List No. 6a**

## K S Hegde Medical Academy

A Constituent College of NITTE (Deemed to be University)

### Dissertation Presentation

**Name of the Student:**
**Date:**
**Name of the Guide:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Review of literature					
3.	Discussion with Guide and other Faculty					
4.	Quality of protocol					
5.	Preparation of Proforma					
Overall Performance						
<b>Remarks:</b>						

.....  
**Name & Signature of Co-Guide (If Any)**

.....  
**Signature of Guide**



**Check List No. 6b**
**K S Hegde Medical Academy**

A Constituent College of NITTE (Deemed to be University)

**Continuous Evaluation of Dissertation Work by Guide / Co-Guide**
**Name of the Student:**
**Date:**
**Name of the Guide:**

Sl. No.	Points to be Observed	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with Guide/Co-guide					
2.	Regular collection of case material					
3.	Depth of analysis/discussion					
4.	Departmental presentation of findings					
5.	Quality of final output					
Overall Performance						
<b>Remarks:</b>						

 .....  
**Name & Signature of Co-Guide (If Any)**

 .....  
**Signature of Guide**

