

**CURRICULUM  
FOR  
2 YEARS DIPLOMA PROGRAMME  
IN  
OPHTHALMIC MEDICINE  
AND  
SURGERY  
(DOMS)**



**2023**

**NISHTAR MEDICAL UNIVERSITY  
MULTAN, PAKISTAN**

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## Vice Chancellor Message

**Prof. Dr. Mahnaz Khaqwani**

It gives me immense pleasure to welcome you to Nishtar Medical University as a Vice Chancellor. Nishtar Medical University is one of the premiers, historical and prestigious institution established in 1951-52. Nishtar Medical University has always occupied a unique position in the public sector

universities, being the first and by now only medical university of south Punjab. It serves an excellent interface between health care provisions and medical education. Its allied hospitals are bearing the brunt of south Punjab and adjoining areas of Sindh, Baluchistan and KPK. Nishtar Medical University Hospital, being the constituent hospital, is providing exemplary medical education to undergraduate and post graduate medical and paramedical students. It is imparting community oriented self-directed learning, altruism, professionalism and leadership in its students since long.

My aim is to make it a state of the art medical university, capable of nurturing the undergraduate and post graduate students with quality teaching and training. It should be able to promote the culture of research and ethical orientation. It must inculcate the true sense of education into the students. However this aim challenges both students and faculty members to rise to their potentials, identify their strengths and direct to acquire much needed lifelong learning skills for academic and social pursuits. The ever expanding faculty of Nishtar Medical University consists of scholars, professors and specialists, who are committed to the highest standards of teaching, training, research and service delivery. All of us can lead this university into an era of innovation and cutting edge scientific inquiry with a truly scientific, social and economic impact.

### **MISSION**

To replace traditional public address type class lectures to problem oriented, student centered , small group learning and a gradual shift to modular system., to develop a robust, transparent and reliable system of evaluation, to develop international collaboration with reputable universities , to develop a parallel program of sports and extracurricular activities, to introduce best practice guidelines and a vigilant periodic surveillance system to meet the Minimum Service Delivery Standards (MSDS), to work towards a paper free hospital, to hire experts in research and medical education and to start a university medical journal.

### **VISION**

To see Nishtar Medical University as a modern, progressive, state of the art Medical institution where educational activities, research and clinical services will develop side by side in an environment of enviable institutional traditions, tolerance and courage to question, centered around a burning passion to ally the pain and sufferings of our people, to produce great scientific minds and to promote a culture of ethical and evidence based practice.

## **AIMS AND OBJECTIVES OF THE COURSE**

### **AIM**

The aim of 02 years diploma programme in Eye is to equip medical graduates with relevant professional knowledge, skills and ethical values to enable them to apply their acquired expertise at primary and secondary health care organizations as non-academic consultants.

### **OBJECTIVES**

At the end of training in DOMS, a trainee doctor should be able to:

1. Take a comprehensive and pertinent history of a patient presenting with Eye related complaints
2. Perform detailed physical examination in a rational sequence that is both technically correct as well as methodical
3. Elicit physical signs without discomfort to the patient
4. Evaluate patients in the setting of outpatients department, hospital wards and emergency
5. Order a set of relevant investigations considering availability, diagnostic yield, cost-effectiveness, side effects, and implications for managements
6. Comprehend community Indicators related to individual's health
7. Aware of and can apply national and international guidelines for treatment and assessment
8. Counsel patients and relatives in patient's preferred language in elective and emergency situations in keeping principles of good communication skills, empathy and empowerment of patients
9. Exhibit emotional maturity and stability, integrity, ethical values and professional approach, sense of responsibility in day-to-day professional activities
10. Take proper informed consent for physical examination and ensure confidentiality and appropriate environment for intimate physical examination
11. Act as an independent specialist at community/ Tehsil and District Headquarter Hospital
12. Show initiative and become lifelong self-directed learners tapping on resources including clinical material, faculty, internet and on-line learning programmes and library

### SPECIFIC LEARNING OUT COMES

Following competencies will be expected from a student completing 2 year's course in DOMS, including clinical, surgical and preventive practice in eye, student should be able to:

1. Discuss etiology, pathogenesis, epidemiology and management of disorders in Eye on topics given in the list of course contents
2. Discuss principles of basic sciences as applied to Eye like hemorrhage, blood transfusion, shock, sterilization of instruments, infection, antibiotics, inflammation, repair & healing and malignancy
3. Identify common eye problems in a scientific manner while keeping in mind the logical reasoning and a clear understanding of their impact on human mind and body
4. Formulate a working diagnosis and consider relevant differential diagnosis
5. Decide and implement suitable treatments considering safety, cost factors, complications and side effects
6. Practice proper procedures in operating theatres & procedure rooms including gowning, gloving, use of various sutures, surgical principles & use & working of electro medical equipment
7. Assist at major surgery and perform recommended eye related procedures under supervision
8. Maintain follow-up of patients at appropriate intervals, recognizing new developments and/ or complications and offering sensible management protocols

## **NOMENCLATURE AND DURATION**

### **NOMENCLATURE OF THE PROPOSED COURSE:**

The name of diploma course should be retained as DOMS. This name has been recognized and established for the last many decades worldwide. The duration of courses should be two years structured training in a recognized department under an approved supervisor.

**Course Title:** DOMS (Diploma in Ophthalmic Medicine and Surgery)

**Training Centers:** Eye Departments (accredited by UHS) in affiliated institutes of the University of Health Sciences Lahore

### **Course Duration and Scheme of the Course:**

**Total Duration** 2 years structured training (09 Months in part I and 15 months in Part II) in a recognized department under the guidance of a approved supervisor

### **Part I-Six Months**

#### **Theoretical Component**

- Anatomy of Orbit and its application pertaining to diseases and surgical procedures
- Physiology of eyeball and adnexa and structures as applied to or affected by disease process
- Pathology (Microbiology, Interpretation of Laboratory test)
- Ocular Pharmacology
- Principles of General Surgery
- Behavioral Sciences
- Biostatistics and Research

#### **Clinical Component**

- Instrumental Skills
  1. Slit Lamp Examination
  2. Direct Ophthalmology
  3. Indirect Examination
  4. 90D Examination

5. Gonioscopy
6. Use of Microscope
7. Refraction/Due chrome test, retinoscopy,
8. Exophthalmometry
9. Amsla's Grid
10. Keratometry
11. Visual Field
12. Ultrasound
- Clinical Skills
  1. Visual Acuity
  2. Pupil Reactions
  3. Digital Tonometry/
  4. Ocular Movements
  5. Cover Tests
  6. lid Eversion
  7. Regurgitation

Regular duties in wards and OPD Routine history taking, examination and investigations

## **Part II – YEAR & a HALF**

### **Theoretical Component**

- NeuroOphthalmology
- Medical Ophthalmology
- Deferential Diagnosis
- Lids
- Cornea
- Conjunctiva
- Uveal Test
- Lens
- Glaucoma
- Retinal Diseases
- Lacrimal Apparatus
- Ocular Motility

### **CLINICAL COMPONEBT**

- Surgical Skills  
Cataract Extraction

Glaucoma surgery

- Common Lid Surgery  
Entropion  
Ectropion  
Trichiasis
- Common Conjunctiva Surgery  
Pterygium  
Squint
- Regular duties in ward and OPD
- Routine history taking, examination and investigations

### **Radiological Tests**

- X- Ray
- CT
- MRI
- Ultra Sound
- A Scan
- B Scan

## **ELIGIBILITY CRITERIA FOR ADMISSION**

### **DOCUMENTS REQUIRED FOR THE ADMISSION**

1. Completed DOMS application form
2. copy of MBBS degree with mark sheets of professional examinations and certificate of number of attempts in the professional examinations
3. copy of PMDC registration certificate
4. three latest passport size photographs
5. reference letters from two consultants, with whom the applicant has worked
6. certificates of completion of required experience
7. I.D Card
8. Domicile

### **GENERAL REQUIREMENTS**

Candidate eligible for admission should have MBBS or equivalent qualification, registered with PMDC and can fulfill one of the following criteria;

- a. One year experience in Ophthalmology as house officer / medical officer from a recognized institution
- b. Six month experience in Ophthalmology and six month in general medicine as surgery as house officer / house surgeon / medical officer

### **SPECIAL REQUIREMENTS**

- A. Obtaining pass percentage in the entry test as one year house job by the NMU rules
- B. Qualifying the interview successfully
- C. Having up to the mark credential as determined by the NMU rules ( no. of attempt in each professional, any gold medals or distinction, relevant work experience from a recognized institution, any research article published in a national and international journal)

### **REGISTRATION AND ENROLLMENT**

- the total numbers of students enrolled for the course must not exceed 8 per unit
- NMU Multan will approve supervisors for diploma courses
- Candidate selected for the courses will be registered with relevant supervisors and enrolled at NMU

### **RECOGNITION /EQUILENCE OF THE DEGREE AND INSTITUTION**

After two years training course, candidate should be given status of mid-level specialist equivalent to any other similar qualification.

### **ACCREDITATION RELATED ISSUES OF THE INSTITUTION**

#### **1. Faculty**

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical AND Dental Council (PMDC)

#### **2. Adequate Space**

Including class room ( with audiovisual aids) computer lab, examination rooms and relevant instruments and machines for eye examination for example, Ophthalmoscope direct and indirect, retinoscope, slit lamp, bio-microscope, gonioscope and three mirror lens, Tonometer, cross cylinder, ultra sound machine, operation theater, operating microscope, 90,78, and 60 D lens, Keratometer

#### **3. Library**

Departmental library should have latest editions of recommended books for DOMS, reference books and latest journals (two national and one international)

## **CONTENT OUTLINE**

### **Part I DOMS**

#### **ANATOMY**

At the end of the course the candidate should be able to discuss gross anatomy of the orbit and its application pertaining to diseases and surgical procedures. Following topics are relevant to teach in Anatomy:

1. Applied Embryology of Eye
2. Orbit bones
3. Soft Parts
4. Cranial nerves, automatic nervous system (2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>)
5. Eye ball + Adnexa
6. Visual Pathways + Cortex
7. Extra ocular Muscles
8. Eye Ball with its coats
9. Cranial Nerves, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>,
10. Autonomic supply of the orbit and its contents
11. Blood supply of the orbit and its contents
12. Lacrimal system
13. Visual pathway and visual cortex

#### **PHYSIOLOGY**

The candidate should be able to understand functions of the eye ball and adnexa and structures as applied to or affected by a disease process.

1. Tear Film
2. Transparency of Cornea
3. Aqueous humour dynamic
4. Pupil, its functions and controls
5. Accommodation
6. Functions of retinal pigment epithelial cells – retina and its physiology
7. Rods and cones, formation of nerve signal and vitamin A metabolism
8. Lens transparency
9. Functions of extra ocular muscles (ocular motility)
10. Binocular vision

## **PATHOLOGY**

### **1. General Pathology**

#### **Cell Injury and adaptation**

##### **Cell Injury**

- Reversible and Irreversible Injury
- Fatty change, Pigmentation, Pathologic calcification
- Necrosis and Gangrene

##### **Cellular adaptation**

- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

##### **Inflammation**

- **Acute Inflammation** --- Vascular changes, Chemo taxis, Opsonization and Phagocytosis
- Enlist the cellular components and chemical mediators of acute inflammation
- Differentiate between exudates and transudate
- **Chronic Inflammation**
- Etiological factors, Granuloma

##### **Cell repair and wound healing**

- Regeneration and Repair
- Healing steps of wound healing by first and second intention
- Factors affecting healing
- Enlist the complications of wound healing

#### **Haemodynamic disorders**

- Define and classify the terms Edema, Hemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Define and classify shock with causes of each.
- Describe the compensatory mechanisms involved in shock
- Describe the pathogenesis and possible consequences of thrombosis
- Describe the difference between arterial and venous emboli

##### **Neoplasia**

- Dysplasia and Neoplasia
- Difference between benign and malignant neoplasms
- Enlist the common etiological factors for neoplasia
- Define and discuss the different modes of metastasis

- TNM staging system and tumor grade

### **Immunity and Hypersensitivity**

## **2. Special Pathology**

Ocular tumors

## **3. Microbiology**

- History and introduction to microbiology
- Microbiology, Physiology, Life Cycle and Classifications parasites
- Role of microbes in various human diseases
- Infection source
- A brief account of the classification of microorganisms
- Morphology: identification of various shapes of bacteria and viruses under the microscope.
- Distribution, size, motility, reproduction and functions of bacteria and viruses.
- Effects of environment upon bacteria and viruses
- Sterilization and disinfection. Definition, use of physical and chemical disinfectants.
- Infection and immunity pathogenicity, pathology of infection, resistance and natural immunity, antigens and antibodies.
- Common bacterial and viral diseases of man.
- Spores yeast and moulds.
- Nosocomial infections
- Bacterial growth and death
- Important viruses
- Important parasites
- Sterilization and disinfection
- Immunization
- Use of investigation and procedures in laboratory
- Interpretation of laboratory tests

The student should be able to understand the relevance and importance of:

- **Swab**
  - Collection
  - Transfer
  - Plating
- **Biopsy**
  - Collection
  - Transfer
- **Gram Staining**
  - TLC
  - ESR
  - Hb%

## **OCULAR PHARMACOLOGY**

The student should be able to choose appropriate drug for a given situation and select the proper route for the best possible delivery

Introduction to ophthalmic pharmacology diagnostic

Therapeutic

Cycloplegics & mydriatics (mechanism of action, pharmacodynamics, pharmacokinetics)

Uses of cycloplegics & mydriatics, adverse effects.

Antibiotics (Types, Uses, Adverse reactions and side effects)

Antiviral

Anti-fungal

Anti – Glaucoma drugs

Adverse reactions of the other ophthalmic drugs

Anti – histamines

Topical anesthetics

Steroids

Anti – inflammatory drugs

Non – steroidal anti-inflammatory drugs

Lubricants

Diagnostic stains: Fluorescein, Rose Bengal

## **Principles of General Surgery**

### **Behavioral Sciences**

- a. Bio- Psycho- Social (BPS) Model of Health Care

- b. Use of non- medicinal interventions in clinical practice
  - Communication Skills
  - Counseling
  - Informational Skills
- c. Crisis intervention / disaster management
- d. Conflict resolution
- e. Breaking bad news
- f. Medical Ethics, professionalism and doctor – patient relationship
  - Hippocratic Oath
  - Four pillars of Medical Ethics ( Autonomy, beneficence, non – maleficence and Justice )
  - Informed consent and confidentiality
  - Ethical dilemmas in a doctor’s life
- g. Delivery of culturally relevant care and cultural sensitivity
- h. Psychological aspects of health and disease
  - Psychological aspects of health
  - Psychological aspects of disease
  - Stress and its management
  - Psychological aspects of pain
  - Psychological aspects of aging

#### **Biostatistics and Research**

- a. Introduction to Bio- Statistics
- b. Introduction to Bio- Medical Research
- c. Why research is important?
- d. What research to do?
  - Selecting a field for research
  - Drivers for heal research
  - Participation in national and international research
  - Participation in pharmaceutical company research
  - Where do research ideas come from
  - Criteria for a good research topic
- e. Ethics in health research
- f. Writing a scientific paper
- g. Making a scientific presentation
- h. Searching the Literature

## **Part II DOMS**

### **Neuro Ophthalmology**

Disc Oedema

Optic Neuritis

Intra-cranial pathology affecting

- Eyes

- Vision
- Visual Field

Paralytic squint

### **Medical Ophthalmology**

Auto immune disease and eyes

Intraocular tumours

Endocranial Disease

### **Lids**

Entropion/ Ectropion

Blephritis

Tumours

- Benign
- Malignant

Ptosis

### **Cornea**

Keratitis

Bacterial

Viral

Chlamydial

Fungal

Corneal opacities

Corneal degeneration and dystrophies

Keratoconus

### **Conjunctiva**

Inflammation / Trachoma

Pseudopterygium

Tumours

Trachoma

Pseudopterygium

- Benign

- Malignant

Symblepharon

Dry eye

### **Uveal Tract**

Uveitis

- Type
- Complication
- Treatment

Coloboma

- Types

### **Lens**

- Types of cataract
- Syndromes
- Surgery
- Management of cataract

### **Glaucoma**

Types of Glaucoma

Treatment

- Medical
- Beta blockers
- Prostaglandin
- Derivatives
- Alpha
- Other
- Surgical

### **Retinal Diseases**

Diabetic retinopathy

Retinal detachment

Central retinal vein occlusion and artery occlusion

Vitreous hemorrhage

### **Lachrymal Apparatus**

Lachrymal passages obstruction and management at different ages

Dry eye

### **Ocular Motility**

Squint

- Paralytic
- Myasthenia gravis

## **Differential Diagnosis**

Students should know major groups of differential diagnosis

### **Low Vision**

- Painless gradual
- Pain less sudden
- Pain full sudden
- Painful gradual

### **Red Eye**

Painful blind eye

Diplopia

Proptosis

Cause of peripheral constriction of visual field

Congenital and developmental diseases of the crystalline lens

Epiphora / watery eye

Corneal deposits/ opacities

White pupil

Dry eye

Ocular surface disease

Papillae

Follicles

## **Physical Optics**

Light

Lasers

Reflection

Laws

Plain surface

Lenses and their for my best

Curved surface

Total internal reflection

Principals of reflection

## **Prisms**

Clinical Optic

- IOLs
- Optics
- Calculation
- principals of refraction
- Retinoscopy
- objective
- subjective
- cross cylinder
- duo chrome test
- transposition of lenses
- low vision aids
- optics and ray diagrams of instruments

### **METHODS OF INSTRUCTION / COURSE CONDUCTION**

As a policy active participation of student at all levels will be encouraged.  
Following teaching modalities will be employed:

#### **1. Lectures**

2. Seminar Presentation and Journal Club Presentation
3. Group Discussion
4. Grand Round
5. Clinic – pathological conferences
6. SEQ as assignment on the content area
7. Self-study assignments and use of internet
8. Bedside teaching rounds in ward
9. OPD & Follow up clinics
10. Operation/ assistance/ supervised surgery
11. Long and short case presentations
12. Clinical skills training workshops

In addition to the conventional teaching methodologies following interactive strategies will also be introduced to improve both communication and clinical skills in the upcoming consultants:

### **Monthly Student Meeting**

#### **1.1.**

Each affiliated medical collage approved to conduct training for DOMS will provide a room for student meetings/ discussions such as

1. Journal Club Meeting
2. Course Curriculum Meetings
3. Skill Development
4. Interactive Sessions

#### **a. Journal Club Meeting**

Two hours per month should be allocated to the presentation and discussion of a recent journal article related to eye diseases. The article should be critically evaluated and its applicable results should be highlighted, which can be maintained in the relevant department of each medical college. Students off different medical collages may be given an opportunity to share all such interesting articles with each other.

#### **b. Core Curriculum Meeting**

All the core topics of DOMS should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief student (elected by the students of the relevant diploma) .Each student in the course and to generate new ideas regarding the improvement of the course structure.

#### **c. Skill Development**

Two hours twice a month should be assigned for learning and practicing clinical skills.

**List of skills to be learnt during these sessions is as follows:**

1. Communication skills
2. Physical examination related to the eye.

3. Practical skills i.e., use of relevant instruments
4. Presentation skills: power point, lectures, small group discussion, article presentation etc.
5. research and scientific writing
6. management of eye related emergencies in primary care
7. for acquisition of instrumental skills like slit lamp examination , direct ophthalmoscope, indirect examination, 90D examination, gonioscopy , use of microscope, refraction, exophthalmometry, Hess Test, kertometry, visual field, ultra sound etc. opportunity during ward posting should be availed

### **1.2 Annual Grand Meeting**

Once a year all students enrolled for DOMS should be invited to the annual meeting at UHS Lahore. One full day will be allocated to this event. All the chief students will present their annual reports. Issue and concerns related to their relevant diploma courses will be discussed. Feedback may be collected and also suggestions can be sought in order to involve students in decision making. The research work and their literary work may also be displayed.

In the evening an informal get together and dinner should be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

## **LOG BOOK**

The trainees must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for the DOMS examination. Log book should include adequate number of diagnostic and therapeutic procedures, routine

and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Proposed format of log book is as follows:

**Candidate's Name** \_\_\_\_\_

**Roll No.** \_\_\_\_\_

**PROCEDURES:**

1. Cataract Surgery
2. Glaucoma Surgery
3. Common Lid Surgery  
Ectropion  
Entropion  
Trichiasis
4. Common Conj. Surgery  
Pterygium  
Squint

**Procedures Performed**

| Sr. # | Date | Name of Patient, Age, Sex & Admission No. | Diagnosis | Procedure Performed | Supervisor's Signature |
|-------|------|-------------------------------------------|-----------|---------------------|------------------------|
| 1     |      |                                           |           |                     |                        |
| 2     |      |                                           |           |                     |                        |

**Emergencies Handled**

| Sr. # | Date | Name of patient, age, sex, admission No. | Diagnosis | Procedure/ Management | Supervisor's Signature |
|-------|------|------------------------------------------|-----------|-----------------------|------------------------|
| 1     |      |                                          |           |                       |                        |
| 2     |      |                                          |           |                       |                        |

**Case Presented**

| Sr. # | Date | Name of patient, age, sex, admission No. | Case Presented | Supervisor's Signature |
|-------|------|------------------------------------------|----------------|------------------------|
| 1     |      |                                          |                |                        |
| 2     |      |                                          |                |                        |

**Seminar / Journal Club Presentation**

| Sr. # | Date | Topic | Supervisor's Signature |
|-------|------|-------|------------------------|
| 1     |      |       |                        |

|   |  |  |  |
|---|--|--|--|
| 2 |  |  |  |
|---|--|--|--|

### Evaluation Record

(Excellent, Good, Adequate, Inadequate, Poor)

| Sr. # | Date | Method of Evaluation<br>(Oral, Practical, Theory) | Rating | Supervisor's<br>Signature |
|-------|------|---------------------------------------------------|--------|---------------------------|
| 1     |      |                                                   |        |                           |
| 2     |      |                                                   |        |                           |

### LITRATURE REVIEW

Students will be assigned clinical problems; commonly encountered in the relevant specialty and will be specifically trained to review literature in the pertinent field and write a '**Review of an Article**' comprising of:

- Topic
- Introduction
- Discussion of the reviewed literature
- Conclusion
- References

## **EXAMINATIONS**

### **Assessment**

It will consist of action and professional growth oriented **student-centered integrated assessment with** an additional component of **informal internal assessment, formative assessment** and measurement – based **summative assessment**.

## **Student- Centered Integrated Assessment**

It views student as decision –makers in need of information about their own performance. integrated assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourage students to ‘own’ the evaluation and to use it as a basis for self- controlled, collaborative, dynamic, contextualized, informal, flexible and action –oriented.

In the proposed curriculum, it will be based on:

- Self-Assessment by the student
- Peer Assessment
- Informal internal Assessment by the Faculty

### **Self-Assessment by the student**

Each student will be provided with a pre- designed self- assessment from to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

### **Peer Assessment**

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non- judgmental in nature. This will enable students to become good mentors in future.

### **Informal Internal Assessment by the Faculty**

There will be no formal allocation of marks for the component of internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will be includes:

- a. Punctuality
- b. Ward work
- c. Monthly Assessment ( written tests to indicate particular areas of weaknesses )
- d. Participation in interactive sessions

### **Formative Assessment**

Will help to improve the existing instructional methods and the curriculum in use

### **Feedback to the faculty by the students:**

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strength and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

### **Summative Assessment**

It will be carried out at the end of the programme to empirically evaluate **conjective, psychometer and affective domain in order** to award diploma for successful completion of course.

### **Eligibility to Appear in Final Examination**

- Only those candidates will be eligible to take final examination who have passed Part -1 examination (after 09 months of education) and have completed two years of structure/supervised training programme.
- Students who have completed their log books and hold certificates of 75% attendance may be allowed to sit for the exam.
- The application for the final examination will be forwarded with recommendation of the supervisor.
- only those candidates who qualify in theory will be called for clinical examination

## **DOMS EXAMINATION**

### **PART I**

#### **a. Content**

1. Anatomy of Orbit and its application pertaining to diseases and

- |                                                                                                 |           |
|-------------------------------------------------------------------------------------------------|-----------|
| surgical procedures                                                                             | (15 MCQs) |
| 2. Physiology of eyeball and adnexa and structures as applied to or affected by disease process | (15 MCQs) |
| 3. Pathology                                                                                    | (15 MCQs) |
| General/ Special Pathology                                                                      | (10 MCQs) |
| Microbiology, interpretation of laboratory test                                                 | (10 MCQs) |
| 4. Ocular Pharmacology                                                                          | (10 MCQs) |
| 5. Sutures / Needles / Gloving / Gowning                                                        | (10 MCQs) |
| 6. Behavioral Sciences                                                                          | (05 MCQs) |
| 7. Biostatistics and Research Methods                                                           | (05 MCQs) |
| 8. Disinfection / Sterilization                                                                 | (05 MCQs) |

#### **b. Tools of Assessment**

|           |                                  |         |
|-----------|----------------------------------|---------|
| MCQ Paper | 100 One Best Type<br>(100 Marks) | 3 Hours |
|-----------|----------------------------------|---------|

## **PART II**

#### **a. Components of the Part II Examination**

|                                |           |
|--------------------------------|-----------|
| Written paper 1                | 100 marks |
| Written paper 2                | 100 marks |
| OSCE                           | 90 marks  |
| Clinical                       | 90 marks  |
| Internal Assessment / Log Book | 20 marks  |

**Total Marks**

**400 marks**

**b. Content**

**Paper I**

1. Neuro Ophthalmology
2. Medical Ophthalmology

**Paper II**

1. Differential Diagnosis
2. Cornea
3. Lids
4. Conjunctiva
5. Lens
6. Glaucoma
7. Uveal Tract
8. Retinal Disease
9. Lacrimal Apparatus
10. Ocular Motility
11. Optics & Refraction
12. Optics of instrument
13. Low Vision

**b. Tools of Assessment**

**1. Written**

|                     |                  |                |
|---------------------|------------------|----------------|
| <b>Paper I</b>      | <b>100 Marks</b> | <b>3 Hours</b> |
| 05 SAQs (No Choice) | 50 Marks         |                |
| 50 MCQs             | 50 Marks         |                |
| <b>Paper II</b>     | <b>100 Marks</b> | <b>3 Hours</b> |
| 05 SAQs (No Choice) | 50 Marks         |                |
| 50 MCQs             | 50 Marks         |                |

**Note:** The candidates, who will pass in written assessment, would be eligible to appear in the clinical assessment.

**2. OSCE**

**90 Marks**

|                       |                          |
|-----------------------|--------------------------|
| <b>Total Station:</b> | <b>10 (Each 9 Marks)</b> |
| Interactive:          | 05                       |
| Static:               | 05                       |

Note: Each station has 06 minutes & one minute for switch over.  
Total 07 minutes

### **3. Clinical**

**90 Marks**

Short Cases  
Long Cases

Four (15 Marks Each)  
One (30 Marks)

A panel of four examiners from affiliated Eye departments (Two internal and two external) will be appointed for practical examination.

Each component of practical examination will be assessed by two examiners awarding marks simultaneously and independently. The final Score awarded will be an average score, as agreed by both examiners.

#### **Pass Percentage and Other Regulations Regarding Examination**

- Criterion referenced assessment principles will be used
- 20 marks for the log book will be included in the OSCE component
- 60% marks will be pass score in each component
- Candidates failing in any one component will have to re-sit the entire examination
- A maximum of 5 attempts to sit for the examination will be allowed, to be availed within 3 calendar years of the first attempt
- Re- admission in DOMS course is not permissible under any circumstances
- The results will be announced according to rules and regulations set by the examination Branch Of Nishtar Medical University Multan.

#### **RECOMMENDED BOOKS**

##### **Anatomy**

1. Snell R. S., Lemp M. A. **Clinical Anatomy of Eye**
2. **Wolf's Anatomy of the Eye**
3. Newell F. W. **Ophthalmology Principles and Concepts.**

##### **Optics and Refraction**

1. Elkington A. R., Frank H. J., Greaney M. J. **Clinical Optics.**
2. Duke- Elder. **Practice of Refraction**

### Physiology

1. Guyton. **Textbook of Medical Physiology.**
2. Newell F. **Ophthalmology Principles and Concepts.**
3. **Alder's Physiology of the Eye.** (For reference)

### Pathology

| PAPER | INCLUDED SUBJECT | FORMAT | MARKS | TOTAL |
|-------|------------------|--------|-------|-------|
|-------|------------------|--------|-------|-------|

1. Apple D. J. Rabb M. F. **Ocular Pathology**

2. Gree. **Ocular Pathology**

Kanski J. J. **Clinical Ophthalmology**

### Ophthalmic Surgery

Newill F. W. **Ophthalmology Principles and Concepts**

### Ophthalmic Surgery

Willshaw H. **Practical Ophthalmic Surgery**

Bailey and Love. **Short Practice of Surgery.**

Rana M. H., Ali S. Mustafa M. **A Handbook of Behavioral Science for Medical and Dental Students.** Lahore; University of Health Science; 2007.

Fathalla M.F. and Eathalla M. M. F. **A Practical Guide for Health Researcher.** Cairo; World Health Organization; 2004

### Journals

1. Archives of Ophthalmology (AMA USA)
2. British Journal Of Ophthalmology (UK)
3. Journal Of Oculoplastics and Reconstructive Surgery (USA)
4. Retina (USA)
5. Eye RC Ophth (UK)

|              |                     |        |    |            |
|--------------|---------------------|--------|----|------------|
| <b>Paper</b> | Ocular Anatomy      | 30 MCQ | 30 | <b>100</b> |
|              | Ocular Physiology   | 25 MCQ | 25 |            |
|              | Ocular Pharmacology | 15 MCQ | 15 |            |
|              | Ocular Pathology    | 30 MCQ | 30 |            |

### Part I

**Distribution of the question according to the table of specification, Intellectual level, level of clinical knowledge and difficulty level**

#### Multiple Choice Questions

| Question No | Topic Covered<br>Anatomy / Physiology/ Pharma / Pathology | Intellect Level | Level of Knowledge | Difficulty Level (1-5) |
|-------------|-----------------------------------------------------------|-----------------|--------------------|------------------------|
|-------------|-----------------------------------------------------------|-----------------|--------------------|------------------------|

|    |                                                     |               |       |   |
|----|-----------------------------------------------------|---------------|-------|---|
| 1  | Anatomy of Orbit -1                                 | Application   | C-2   | 3 |
| 2  | Anatomy of Embryo -1                                | App/ Analysis | C-1   | 2 |
| 3  | Anatomy of Eyeball adenexa -1                       | Application   | C-3   | 5 |
| 4  | Cycloplegic and mydriatic                           | App/ Analysis | C-1   | 2 |
| 5  | Anatomy of soft parts -1                            | App/ Analysis | C-2   | 3 |
| 6  | Acute inflammation -1                               | App/ Analysis | C-2   | 3 |
| 7  | Cell injury -1                                      | App/ Analysis | C-3   | 4 |
| 8  | Anti-Histamine                                      | App/ Analysis | C-2   | 3 |
| 9  | Physiology of Tear Film                             | Application   | C-1   | 3 |
| 10 | Cellular adaptation -1                              | Application   | C-3   | 5 |
| 11 | Anatomy of blood supply of orbit and its content -1 | Application   | C-1   | 3 |
| 12 | Chronic inflammation -1                             | Application   | C-1   | 3 |
| 13 | Cell repair and wound healing -1                    | App/ Analysis | C-2/3 | 4 |
| 14 | Anti-biotic -1                                      | Application   | C-2   | 3 |
| 15 | Anatomy of Cranial nerve -1                         | Application   | C-2   | 3 |
| 16 | Physiology of Cornea -1                             | Application   | C-1   | 2 |
| 17 | Anatomy of soft parts -2                            | Application   | C-2   | 3 |
| 18 | Cell injury -2                                      | Application   | C-2   | 3 |
| 19 | Microbiology -1                                     | App/ Analysis | C-2/3 | 4 |
| 20 | Physiology of Aqueous humor -1                      | App/ Analysis | C-2   | 3 |
| 21 | Anatomy of visual Pathway + Cortex -1               | App/ Analysis | C-3   | 4 |
| 22 | Heamodynamic disorder -1                            | App/ Analysis | C-1   | 2 |
| 23 | Anti-viral -1                                       | Analysis      | C-1   | 2 |
| 24 | Anatomy of extra ocular muscles -1                  | Application   | C-2   | 2 |
| 25 | Acute inflammation -2                               | Application   | C-2   | 3 |
| 26 | Chronic inflammation -2                             | Application   | C-3   | 4 |
| 27 | Anatomy of Eyeball adenexa -2                       | Application   | C-1   | 2 |
| 28 | Physiology of Aqueous humor -2                      | App/ Analysis | C-2   | 3 |
| 29 | Anatomy of blood supply of orbit and its content -2 | App/ Analysis | C-2   | 3 |
| 30 | Ocular tumor -1                                     | Analysis      | C-2   | 4 |
| 31 | Topical Anesthesia                                  | Application   | C-2   | 3 |
| 32 | Anatomy of Orbit -2                                 | App/ Analysis | C-2   | 3 |
| 33 | Physiology of Pupil -1                              | App/analysis  | C-2/3 | 4 |
| 34 | Anti-biotic -2                                      | App/analysis  | C-2   | 3 |
| 35 | Chronic inflammation -3                             | Application   | C-3   | 4 |
| 36 | Anatomy of Cranial nerve -2                         | Analysis      | C-2   | 3 |
| 37 | Anti-Glaucoma -1                                    | Application   | C-2   | 3 |
| 38 | Anatomy of Eyeball with its coats -1                | Analysis      | C-2   | 3 |
| 39 | Ocular tumor -2                                     | Analysis      | C1/2  | 2 |
| 40 | Anti-fungal -1                                      | Application   | C-1   | 2 |
| 41 | Anatomy of visual Pathway + Cortex -2               | Application   | C-2   | 3 |
| 42 | Physiology of Accommodation                         | App/analysis  | C-2   | 3 |
| 43 | Steroid -1                                          | Analysis      | C-2   | 3 |
| 44 | Microbiology -2                                     | App/analysis  | C-3   | 4 |
| 45 | Physiology of Retina -1                             | App/analysis  | C-3   | 5 |

|    |                                                     |               |       |   |
|----|-----------------------------------------------------|---------------|-------|---|
| 46 | Anatomy of Eyeball adenexa -3                       | Application   | C-2   | 2 |
| 47 | Diagnostic stains                                   | Application   | C-2   | 3 |
| 48 | Physiology of Formation of nerve signal -1          | Application   | C-2   | 3 |
| 49 | Acute inflammation -3                               | Analysis      | C-3   | 4 |
| 50 | Anatomy of extra ocular muscles -2                  | Application   | C-2   | 3 |
| 51 | Cellular adaptation -2                              | Application   | C-1   | 2 |
| 52 | Physiology of Rods and Cones                        | App/ Analysis | C-2/3 | 4 |
| 53 | Anatomy of lacrimal system -1                       | Application   | C-2   | 2 |
| 54 | Ocular tumor -3                                     | App/ Analysis | C-2   | 3 |
| 55 | Anti-viral -2                                       | App/ Analysis | C-1   | 2 |
| 56 | Physiology of Cornea -2                             | Application   | C-2   | 3 |
| 57 | Anatomy of Cranial nerve -3                         | App/ Analysis | C-2   | 3 |
| 58 | Microbiology -3                                     | Application   | C-2/3 | 4 |
| 59 | Physiology of Retina -2                             | App/ Analysis | C-2/3 | 4 |
| 60 | Physiology of Lens -1                               | App/ Analysis | C-1   | 2 |
| 61 | Anatomy of Eyeball adenexa -4                       | App/ Analysis | C-1   | 2 |
| 62 | Physiology of Vit- A Metabolism                     | App/ Analysis | C-2   | 3 |
| 63 | Anti-fungal -2                                      | App/ Analysis | C-1   | 2 |
| 64 | Acute inflammation -4                               | Application   | C-2   | 3 |
| 65 | Physiology of Ocular Motility -1                    | Application   | C-3   | 4 |
| 66 | Anatomy of lacrimal system -2                       | Application   | C-1   | 2 |
| 67 | Physiology of BSV -1                                | Application   | C-2   | 3 |
| 68 | Anatomy of Eyeball adenexa -5                       | App/ Analysis | C-2   | 3 |
| 69 | Physiology of Pupil -2                              | Application   | C-1   | 2 |
| 70 | Microbiology -4                                     | Application   | C-2   | 3 |
| 71 | Immunity and hypersensitivity                       | Application   | C-2   | 3 |
| 72 | Physiology of Lens -2                               | Application   | C-2/3 | 4 |
| 73 | Heamodynamic disorder -2                            | Application   | C-2/3 | 5 |
| 74 | Physiology of Ocular Motility -2                    | App/ Analysis | C-2   | 3 |
| 75 | Anatomy of Eyeball with its coats -2                | App/ Analysis | C-2   | 3 |
| 76 | Neoplasia -1                                        | App/ Analysis | C-1   | 2 |
| 77 | Lubricants                                          | App/ Analysis | C-2   | 3 |
| 78 | Physiology of Retina -3                             | Analysis      | C1/2  | 3 |
| 79 | Steroid -2                                          | Application   | C-1   | 2 |
| 80 | Cell injury -3                                      | Application   | C-2   | 3 |
| 81 | Physiology of Formation of nerve signal -2          | Application   | C-3   | 5 |
| 82 | Anatomy of visual Pathway + Cortex -3               | Application   | C-2/3 | 5 |
| 83 | Physiology of BSV -2                                | App/ Analysis | C-1   | 2 |
| 84 | Anatomy of extra ocular muscles -3                  | App/ Analysis | C-2   | 3 |
| 85 | Neoplasia -2                                        | Analysis      | C-2   | 3 |
| 86 | Physiology of Aqueous humor -3                      | Application   | C-2   | 3 |
| 87 | Anatomy of Eyeball adenexa -6                       | App/ Analysis | C-2   | 3 |
| 88 | Physiology of Lens -3                               | App/analysis  | C-2   | 3 |
| 89 | Anatomy of blood supply of orbit and its content -3 | App/analysis  | C-2   | 3 |
| 90 | Cell repair and wound healing -2                    | Application   | C-1   | 2 |

|     |                                                     |              |       |   |
|-----|-----------------------------------------------------|--------------|-------|---|
| 91  | Anti-Glaucoma -2                                    | Analysis     | C-2/3 | 4 |
| 92  | Physiology of Retina -4                             | Application  | C-2   | 3 |
| 93  | Microbiology -5                                     | Analysis     | C-2   | 3 |
| 94  | Acute inflammation -5                               | Analysis     | C-2   | 3 |
| 95  | Neoplasia -3                                        | Application  | C-2   | 3 |
| 96  | Anatomy of blood supply of orbit and its content -4 | Application  | C-1   | 2 |
| 97  | Chronic inflammation -4                             | App/analysis | C-2/3 | 4 |
| 98  | Physiology of Pupil -3                              | Analysis     | C-2/3 | 4 |
| 99  | Anatomy of Eyeball adenexa -7                       | App/analysis | C-1   | 2 |
| 100 | Anatomy of Embryo -2                                | App/analysis | C-3   | 4 |

**Topic covered in the Multiple Choice Questions**

1. Orbit
2. Soft Parts
3. Embryology
4. Eye ball Adenexa
5. Visual pathway + Cortex
6. Eye ball with its coats
7. Blood supply of orbit and contents
8. Tear film
9. Lacrimal System
10. Pupil
11. Cornea
12. Aqueous Humor/ IOP
13. Extra Ocular Muscles
14. Lens
15. Accommodation
16. BSV
17. Retina
18. General Pathology
19. Special Pathology
20. Cranial Nerves
21. Topical anesthesia
22. Anti –fungal drugs
23. Anti viral
24. Steroids
25. Cycloplegic and Mydriatics
26. Anti- histamine
27. Diagnostic Stains
28. Anti- biotic
29. Anti- Glaucoma

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| PAPER | INCLUDED SUBJECT | FORMAT | MARKS | TOTAL |
|-------|------------------|--------|-------|-------|
|-------|------------------|--------|-------|-------|

|                |                         |                 |       |     |
|----------------|-------------------------|-----------------|-------|-----|
| <b>Paper 1</b> | Neuro-Ophthalmology     | 15 MCQ<br>2 SAQ | 15+20 | 100 |
|                | Medical- Ophthalmology  | 35 MCQ<br>3 SAQ | 35+30 |     |
| <b>Paper 2</b> | Clinical- Ophthalmology | 25 MCQ<br>2 SAQ | 25+20 | 100 |
|                | Optic & Refraction      | 15 MCQ<br>2 SAQ | 15+20 |     |
|                | Optic of instrument     | 5 MCQ<br>1 SAQ  | 5+10  |     |
|                | Low Vision              | 5 MCQ           | 5     |     |

**Distribution of the question according to the table of specification, Intellectual level, level of clinical knowledge and difficulty level**

#### **Multiple Choice Questions**

| <b>Question No</b> | <b>Topic Covered<br/>Neuro-Ophthalmology / Medical-</b> | <b>Intellect Level</b> | <b>Level of Knowledge</b> | <b>Difficulty Level (1-5)</b> |
|--------------------|---------------------------------------------------------|------------------------|---------------------------|-------------------------------|
|--------------------|---------------------------------------------------------|------------------------|---------------------------|-------------------------------|

|    |                                  |               |       |   |
|----|----------------------------------|---------------|-------|---|
|    | <b>Ophthalmology</b>             |               |       |   |
| 1  | Neuro-Ophthalmology 1            | Application   | C-2   | 3 |
| 2  | Disease of eye lid-1             | App/ Analysis | C-1   | 2 |
| 3  | Examination techniques 1         | Application   | C-3   | 5 |
| 4  | Neuro-Ophthalmology 2            | App/ Analysis | C-1   | 2 |
| 5  | Cornea 1                         | App/ Analysis | C-2   | 3 |
| 6  | Conjunctiva 1                    | App/ Analysis | C-2   | 3 |
| 7  | Neuro-Ophthalmology 3            | App/ Analysis | C-3   | 4 |
| 8  | Disease of eye lid-2             | App/ Analysis | C-2   | 3 |
| 9  | Lacrimal System 1                | Application   | C-1   | 3 |
| 10 | Neuro-Ophthalmology 4            | Application   | C-3   | 5 |
| 11 | Conjunctiva 2                    | Application   | C-1   | 3 |
| 12 | Examination techniques 2         | Application   | C-1   | 3 |
| 13 | Neuro-Ophthalmology 5            | App/ Analysis | C-2/3 | 4 |
| 14 | Orbit 1                          | Application   | C-2   | 3 |
| 15 | Disease of eye lid-3             | Application   | C-2   | 3 |
| 16 | Neuro-Ophthalmology 6            | Application   | C-1   | 2 |
| 17 | Lacrimal System 2                | Application   | C-2   | 3 |
| 18 | Cornea 2                         | Application   | C-2   | 3 |
| 19 | Neuro-Ophthalmology 7            | App/ Analysis | C-2/3 | 4 |
| 20 | Orbit 2                          | App/ Analysis | C-2   | 3 |
| 21 | Corneal and Refractive Surgery 1 | App/ Analysis | C-3   | 4 |
| 22 | Neuro-Ophthalmology 8            | App/ Analysis | C-1   | 2 |
| 23 | Lens 1                           | Analysis      | C-1   | 2 |
| 24 | Cornea 3                         | Application   | C-2   | 2 |
| 25 | Neuro-Ophthalmology 9            | Application   | C-2   | 3 |
| 26 | Corneal and Refractive Surgery 2 | Application   | C-3   | 4 |
| 27 | Orbit 3                          | Application   | C-1   | 2 |
| 28 | Neuro-Ophthalmology 10           | App/ Analysis | C-2   | 3 |
| 29 | Lens 2                           | App/ Analysis | C-2   | 3 |
| 30 | Corneal and Refractive Surgery 3 | Analysis      | C-2   | 4 |
| 31 | Neuro-Ophthalmology 11           | Application   | C-2   | 3 |
| 32 | Lens 3                           | App/ Analysis | C-2   | 3 |
| 33 | Eplsclera and Sciera 1           | App/analysis  | C-2/3 | 4 |
| 34 | Neuro-Ophthalmology 12           | App/analysis  | C-2   | 3 |
| 35 | Lens 4                           | Application   | C-3   | 4 |
| 36 | Glaucoma 1                       | Analysis      | C-2   | 3 |
| 37 | Neuro-Ophthalmology 13           | Application   | C-2   | 3 |
| 38 | Eplsclera and Sciera 2           | Analysis      | C-2   | 3 |
| 39 | Glaucoma 2                       | Analysis      | C1/2  | 2 |
| 40 | Neuro-Ophthalmology 14           | Application   | C-1   | 2 |
| 41 | Neuro-Ophthalmology 15           | Application   | C-2   | 3 |
| 42 | Trauma 1                         | App/analysis  | C-2   | 3 |
| 43 | Eplsclera and Sciera 3           | Analysis      | C-2   | 3 |
| 44 | Retinal Detachment 1             | App/analysis  | C-3   | 4 |
| 45 | Glaucoma 4                       | App/analysis  | C-3   | 5 |
| 46 | Retinal Detachment 2             | Application   | C-2   | 2 |
| 47 | Trauma 2                         | Application   | C-2   | 3 |

|    |                      |             |     |   |
|----|----------------------|-------------|-----|---|
| 48 | Glaucoma 3           | Application | C-2 | 3 |
| 49 | Retinal Detachment 3 | Analysis    | C-3 | 4 |
| 50 | Trauma 3             | Application | C-2 | 3 |

**Topic covered in the Multiple Choice Questions**

- 30. Neuro-Ophthalmology
- 31. Clinical- Ophthalmology

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**Distribution of the question according to the table of specification, Intellectual level, level of clinical knowledge and difficulty level**

**Short Answer Questions**

| Question No | Topic Covered<br>Neuro-Ophthalmology / Medical-Ophthalmology | Intellect Level | Level of Knowledge | Difficulty Level (1-5) |
|-------------|--------------------------------------------------------------|-----------------|--------------------|------------------------|
| 1           | Neuro-Ophthalmology 1                                        | Application     | C-2                | 3                      |
| 2           | Medical Ophthalmology 1                                      | App/ Analysis   | C-1                | 2                      |
| 3           | Medical Ophthalmology 2                                      | Application     | C-3                | 5                      |
| 4           | Neuro-Ophthalmology 2                                        | App/ Analysis   | C-1                | 2                      |
| 5           | Medical Ophthalmology 3                                      | App/ Analysis   | C-2                | 3                      |

**Topic covered in the Multiple Choice Questions**

1. Neuro-Ophthalmology
2. Medical- Ophthalmology

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