

Curriculum



Diploma in Ophthalmology (DO)

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Shahbagh, Dhaka.

CONTENTS

1.	Name of the course	4
2.	Duration	4
3.	Date of commencement	4
4.	Aims and objectives	4
5.	Aims of the program	4
6.	Eligibility for admission	7
7.	Admission test	7
8.	Course Content	7
9.	Training Rotations	8
10.	Summative Examination	8
11.	Examination format	11
12.	Formative assessment	12
13.	Core clinical Syllabus	12
14.	Eligibility for appearing in the final examination	33
15.	Diploma trainee's Block progress report	34

1. Name of the course : **Diploma in Ophthalmology (DO)**
2. Duration : Two academic years
3. Date : July of each year
4. Aims and objectives :

Aims of the program

- a. To produce competent basic ophthalmologist having strong knowledge, skill and attitude in ophthalmology, fit for giving consultancy service independently even in the periphery.
- b. It provides the professional with enhanced skills and a sub-speciality interest.
- c. It provides a route for improving standards of clinical care
- d. It enhances their professional standing, linking with Clinical Governance and continuing professional development
- e. The program rests on a set of explicit values and beliefs about the student, the nature and the context of clinical practice and the facilitation of learning necessary to enable

enhanced professional practice in primary care. Clinical practice is a highly skilled and valued activity into which each practitioner brings a personal and professional contribution that is enhanced by reflection on, and in, practice, critical appraisal and evidence based enquiry.

Objectives

The clinical postgraduate training program is intended at developing in a student a blend of qualities of a clinical specialist, a teacher and a researcher and they are organized such that a postgraduate should possess the following qualities, knowledge and skills:

- a.** The student should possess basic knowledge of the structure, function and development of the human body as related to Ophthalmology, of the factors which may disturb these mechanisms of such disturbances and the disorders of structure and function, which may result.

- b.** The student should be able to practice and handle most day to day problems independently in Ophthalmology. He should recognize the limitations of his own clinical knowledge and know when to seek further help.
- c.** The student should understand the effect of environment on health and be familiar with the epidemiology of at least the more common diseases in the field of Ophthalmology. He should be able to integrate the preventive and promotive methods with the curative and rehabilitative measures in the treatment of disease.
- d.** The student should be Ophthalmologist at the door step of community. He should be familiar with common eye problems occurring in rural areas and be able to deal with them effectively.
- e.** The student should be familiar with the current developments in Ophthalmic Sciences.

- f. Contribute as an individual / group towards the fulfillment of national eye care objectives with regard to prevention of blindness

5. Eligibility for admission:

- a. MBBS or its equivalent degree recognized by BMDC.

- b. Minimum two years after passing MBBS or its equivalent degree recognized by BMDC.

6. Admission test:

Written admission test of MCQ pattern, containing 60% question from basic subjects related to the practice of ophthalmology & 40% from clinical ophthalmology

7. Course content:

Paper I (Basics)

Group A: Anatomy including embryology

Group B: Physiology & Biochemistry

Paper II

Group A: Pathology & Pharmacology

Group B: Optics & Refraction

Paper III

Group A: Ophthalmic Medicine

Group B: Ophthalmic Surgery

8. Training rotations:

In institutions where subspecialties are not being usually performed (eg. VR surgery, orbit surgery etc.) students could be deputed for a month or so in institutions in which these specialties are highly developed. For a Diploma student, optional rotation postings to allied departments would include:

Radiology

Neurology/Neurosurgery

Intensive Care

ENT

9. Summative Examination:

- 9.1. Summative or exit examination will be at the end of the course and then twice a year, in July and January of each year the date determined by the university.

- 9.2 Three papers on written examination. Each paper is being divided into Group A and Group B.
- 9.3. Written questions: In each paper there will be four questions. Two of them will be Long Essay type and two will be of SAQ type, five in each question.

- 9.4. Clinical-practical:

Clinical:

There will be one long case (50 marks) and minimum three short cases (50 marks). In long case 30 minutes will be for history taking and examination and 15 minutes for crossing by two examiners. Fifteen minutes will be allotted for short cases. Two examiners will assess the candidate in long case. Two examiners will assess short cases of opposite group of students.

Practical/OSCE:

There will be 10 stations for OSPE, each of which will have 10 marks (10 X 10=100 marks).

9.5. **Oral:**

There will be two boards: In each board there will be two examiners. Fifteen minutes for each board equally divided into two examiners. There will be 4 examiners, Associate professor and above. 50% of the examiners will be external.

- 9.6. To pass, the candidate have to secure at least 60% marks in each of the three components of written (three paper combined), clinical-practical and oral examination.

Examination format:

Component of Examination	Papers	Subject of Papers	Marks allotted	Time	Pass Marks
a. Written	Paper I Group A	Anatomy including Embryology(50) & Physiology & Biochemistry (50)	100	3 hours	
	Group B				
	Paper II Group A	Pathology (25) & Pharmacology (25)	100	3 hours	
Group B	Optics & Refraction (50)				
	Paper III Group A	Ophthalmic Medicine (50)	100	3 hours	
	Group B	& Ophthalmic Surgery (50)			
	Total		300		
b. Clinical & Practical	Clinical OSPE	Long case (50) Short case (50) OSPE (100)	200		120
c. Oral			100		60
Total			600		360

10. Formative assessment:

There will be formative assessment at the end of each six months of training by the supervisor of department or by the institute. Three satisfactory certificates will be pre-requisite along with others for appearing in the final exit examination. The last six months will end with summative examination.

11. Core clinical Syllabus:**11.1 Anatomy****Orbital and ocular anatomy**

- i. Gross anatomy of the eye and ocular adnexa
- ii. Anatomy of motor mechanisms
- iii. Histology
- iv. Embryology of the eye and adnexa

11.2 Physiology**Ocular Physiology**

- i. The visual pathways
- ii. Physiology of motor mechanisms

- iii. Physiology of vision, colour vision and accommodation
- iv. Binocular vision and its development
- v. Maintenance of intra ocular pressure
- vi. The Neurology of vision (Visual pathway, pupillary pathways and reaction) dark adaptation.
- vii. Physiology of aqueous humour and its circulation and maintenance of intraocular pressure.
- viii. Maintenance of corneal transparency.
- ix. Tear circulation
- x. Blood aqueous barrier.

Biochemistry

- i. General biochemistry, Biochemistry applicable to ocular function
- ii. Vitamin A and its metabolism
- iii. Glucose metabolism
- iv. Aqueous composition

- v. Biochemical aspects of cataract (Senile and diabetic)
- vi. Thyroid function tests
- vii. Tear film and its composition.

11.3 **Pathology**

Ocular pathology

- i. Gross pathology, Histopathology, basics of general pathology
- ii. Pathology of ocular and adnexal lesions

Microbiology

General Microbiology, Specific microbiology applicable to the eye

Immunology

With particular reference to ocular immunology.

11.4 **Pharmacology**

Pharmacology of drugs used in Ophthalmology

- i. Autonomic drugs – Sympathomimetic, Sympatholytics, cholinergic, anticholinergic agents

- ii. Antibiotics and chemotherapeutic agents used in ophthalmology
- iii. Anti-inflammatory agent – steroid and non-steroidal agents
- iv. Anti virals and antifungals used in ophthalmology
- v. Local anaesthetics
- vi. Dyes used in ophthalmology – fluorescein, rose Bengal, ICG, Alissamin Green etc.
- vii. Tear Substitutes
- viii. Drugs used to reduce intra ocular pressure (systemic and topical agents)
- ix. Ocular penetration of systemically administered drugs and topical agents.
- x. Anti-mitotic agents and immunosuppressive

11.5 **Optics & Refraction**

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

11.6 **Ophthalmic Medicine**

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

11.7 **Ophthalmic Surgery**

12. Procedural Skills:

I. Examination techniques along with interpretation

1. Slit lamp Examination

- i) Diffuse Examination
- ii) Focal Examination
- iii) Retrolumination-direct & indirect
- iv) Sclerotic scatter
- v) Specular reflection
- vi) Staining modalities and interpretation

2. Fundus evaluation

Direct & Indirect ophthalmoscopy

Fundus Drawing

- 3-mirror Examination of the fundus
- 78-D/90-D/60-D Examination
- Evaluation of Amsler's chart

II. Basic Investigation along with their interpretation

1. Tonometry

- Tonometry–Application/Indentation/Non contact
- Gonioscopy- grading of then angle

2. Tear/ Lacrimal function tests

- i) Staining- fluorescein Rose Bengal
- ii) Schirmer/ Break up time
- iii) Syringing
- iv) Dacrocystography
- v) Jones dye test

3. Corneal

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

4. Colour Vision Evaluation

Ishihara pseudoisochromatic plates

5. Refraction

- i) Retinoscopy- streak/ Priestley Smith
- ii) Use of Jackson's cross-cylinder
- iii) Subjective and objective refraction
- iv) Prescription of glasses
- v) Use of Autorefractometer

6. Diagnosis & Assessment of squint

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

7. Exophthalmometry

- Measurement of proptosis, including Hertel's exophthalmometry

8. Contact lenses

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

9. Low Vision Aids

Knowledge of basic optical devices available and their relative advantages and disadvantages.

10. Community Ophthalmology

- i. To be acquainted with National Eye Care Plan including Vision 2020.
- ii. Ability to organize institutional screening
- iii. Ability to organize peripheral eye screening camps
- iv. Knowledge and ability to execute guidelines of National program for prevention of blindness.

III. The Diploma postgraduate must be versed with the following investigative modalities although he may not perform it himself. But he should be able to interpret the following tests:

1. Fundus Photography
2. Fundus Fluorescent angiography
3. OCT
4. Ophthalmic ultrasound
A-scan /B-scan
5. Automated perimetry for glaucoma and neurological lesions
6. Radiological & Imaging tests
X rays – Antero Posterior/ Lateral View, PNS (Water's view) / Optic canal views
Localization of ocular and intra orbital FBs
Interpretation of – CT scan and MRI
7. Specular Biomicroscopy

IV. Minor surgical procedures- must know and perform independently

- i. Conjunctival and corneal foreign body removal on the slit lamp
- ii. Chalazion incision and curettage
- iii. Pterygium excision
- iv. Biopsy of small lid tumours
- v. Suture removal- skin / conjunctival/ corneal / corneoscleral
- vi. Tarsorrhaphy
- vii. Subconjunctival injection
- viii. Surface anesthesia
- ix. Retrobulbar, Peribulbar anesthesia
- x. Posterior Sub-Tenon's injections
- xi. Artificial eye fitting

V. Surgical Procedures**1) Must know and can perform independently**

- i. Ocular surface Anesthesia
- ii. Peribulbar and Retro bulbar anesthesia
- iii. Facial blocks- O'Brein / Atkinson/ Van lint & modifications

- iv. Frontal Blocks
 - v. Infra Orbital Blocks
 - vi. Blocks for sac surgery and subtenon's injections
- 2) Must be able to independently perform and deal with complications arising from the following surgeries:**
- i. Ectropion & entropion
 - ii. Lid repair following trauma
 - iii. Epilation
 - iv. Orbital reconstructive procedures
 - Evisceration with or without implant
 - Enucleation with or without implant
 - v. Sac surgery
 - Dacryocystectomy
 - Dacryocystorhinostomy
 - Probing for congenital obstruction of nasolacrimal duct
 - vi. Orbit surgery
 - Incision and drainage via anterior orbitotomy for abscess
 - vii. Cyclocryotherapy

- 3) Well conversant with use of Operating microscope and must be able to perform the following surgeries competently under the same.**

Cataract surgery

- i. Standard ECCE with or without IOL implantation
- ii. Small incision ECCE with or without IOL implantation
- iii. Secondary AC or PC IOL implantation
- iv. Vectis extraction

Intra-Vitreous Procedures

- i. Intra vitreal and intra cameral (anterior chamber) injection techniques and dosages, particularly for endophthalmitis management.
- ii. Needs to know the basis of open sky vitrectomy (anterior segment) as management of cataract surgery complication.

Surface ocular procedures

- i. Pterygium excision with modifications

- ii. Conjunctival cyst excision/ foreign body removal
- iii. Corneal foreign body removal
- iv. Conjunctival flap/ peritomy

Corneal

- i. Repair of corneo – scleral perforations
- ii. Corneal suture removal

4) Should have assisted in the following:

Keratoplasty

- i. Therapeutic and optical

Glaucoma surgery

- i. Trabeculectomy
- ii. Pharmacological modifications of trabeculectomy

Phaco Surgery

Laser DCR

Exenteration

Pars plana vitrectomy

Different ophthalmic Laser Procedures

Refractive surgeries

VI. Students must attain an attitude appropriate towards the patients and at the end of the teaching they will be able to demonstrate the following:

- a. A patient- centered role
- b. Scientific Integrity
- c. Ethical- Medical Professional Behavior
- d. Dedicated to continuous Learning.

Postgraduate Training:

1) Theoretical knowledge

- Basic sciences and optics should be addressed during this period
- It is useful to have an internal examination on the basic sciences and optics at the end of the first year which will decide appearance at the final examination.

2) Clinical Ophthalmology & refraction

The Basic of history taking, order and correct methods of Examination and recording have to be learnt during this time

Clinical and surgical decision-making is encouraged under supervision

Refraction

Diagnostics

All procedure in bold should as far as possible be done and the student be fairly conversant with most of the techniques marked in bold.

3) Surgery- Independently performed

Subconjunctival injections

Local anesthesia (retrobulbar and peribulbar blocks)

Chalazion & pterygium surgery

Lid and corneal foreign body removal on the slit lamp etc.

Tarsorrhaphy

Extra ocular surgery including

Destructive procedures- Independently with / without assistance

Assisting for squint surgery

Assisting for lid surgery & simpler oculoplastic procedures

4) Cataract surgery

Cataract surgery done in stages. Emphasis on use of microscope

By the end of the first year the student be able to do standard extracapsular cataract Extraction and SICS at least under guidance.

5) Theoretical knowledge:

In the second year stress will be laid on clinical Ophthalmology

6) Diagnostics:

The student is encouraged to take diagnostic investigational and therapeutic decision on his own when in second year. He / She should be able to manage most of the common problems that arise without guidance. However, the degree of freedom allowed in decision making left to the confidence of the teacher in the student's abilities the student should be conversant and at ease with all the diagnostic procedures outlined in the section on 'Essential diagnostic' skills instrumentation'.

7) Surgical skills:

- a. At the end of the second year, the student should be capable of operate without assistance, but under supervision, all varieties of cataract except congenital cataract.
He/She should also know the management of cataract induced complications and cataract surgical complications (management of vitreous loss)
- b. He/She should have performed the basic anti-glaucoma procedures such as trabeculectomy either with assistance or under supervision.
- c. Extra ocular surgery such as squint surgery could be performed with assistance.
- d. In addition, lacrimal sac surgery such as dacryocystectomy, dacryocystorhinostomy should be possible with assistance or under supervision.

8) Conference Case discussion:

The student should have attended one or two regional workshops and one national conference if possible. Presentation of a free paper at these venues is to be encouraged.

9) Clinical Case discussion:

- a. Bedside discussion on the rounds and outpatient teaching take their toll with patient management. Therefore in addition to these, clinical case discussions should form part of a department's schedule at a fixed time every week. This could range from 1-2 hours and could be held at least once a week. The choice and manner of presentation and discussion varies widely and is left to the discretion of the department. Every effort should be made as wide a variety of cases as possible over two years with multiple repetitions. Problems oriented approach is better as it aids in decision making skills.
- b. Consultant case presentation is another approach which should be encouraged as it aids in solving complex problems and also is forum for discussion of interesting cases c. Case discussions on the patient's records written by the student is to be encouraged as

it helps exercise the student's diagnostic and decision making skills. It also helps the consultant in critical evaluation of the student's progress academically.

- d. Case presentation at other in-hospital multidisciplinary forums.

10) Seminars:

- a. Seminars should be conducted at least once weekly. The duration should be 1-15 hours. The topics selected should be repeated once in 2 years so as to cover as wide a range of topics as possible.
- b. Seminars could be individual presentations or a continuum (large topic) with many students/residents participating.

11) Journal clubs:

This also should be a once week or once in two weeks exercise. The topics selected should be correct. It could be done topic wise or journal wise ideally, indexed journals are recommended.

12) Clinico-pathological conference:

Two or more should be done per year ideally

13) Lectures:

- a. Lectures to students should be in the form of instructional courses at the beginning of the academic term. These would include topics such as dark room techniques, evaluation of perimetry, squint evaluation and management; slit lamp examination with accessories such as gonioscopy funds fluorescein angiography etc.
- b. Lectures could also be arranged round the year on sub-specialty topics.

12. Writing case-note/ Operation note

Each student will write case-note (History, Examination, Investigation, Treatment and follow up/ Operation/procedure note). Total number should be at least 10.

13. Learning Process:

- Experiential learning opportunities
- Training in practical procedures

- Small group learning opportunities
- One-to-one teaching
- Regular teaching and External Course
- Personal study
- Teaching undergraduate medical students
- Presenting cases
- Journal club presentations

14. Eligibility for appearing in the final examination:

- a. Two year in-course training.
- b. 3 satisfactory 6 monthly report of formative assessment
- c. 75% attendance in lectures, OPD-clinics, OT & other academic activities
- d. Satisfactorily completed logbook including case notes



**Bangabandhu Sheikh Mujib Medical University
Shahbag, Dhaka**

Diploma trainee's Block progress report

Name of the trainee : Session :
 Name of the course : Reg. No:
 Name of the institute :
 Period of block :

Performance	Poor	Satisfactory	Good	Excellent
Written*				
Clinical- Practical*				
Oral*				
Attendance*				
Attitude				

* Poor: <50%, Satisfactory: ≥50-60%, Good: >60-75%, Excellent : >75%

Note: "Poor" grade in more than two performance during a particular block means deficient training and also cause disqualification for appearing in the final examination unless training in particular block is complete.

Signature:
 Head of the Department
 (Seal)