

NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA



CURRICULUM FOR SUBSPECIALTY OF NEURO
OPHTHALMOLOGY

FACULTY OF OPHTHALMOLOGY

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NATIONAL POSTGRADUATE COLLEGE OF NIGERIA

FACULTY OF OPHTHALMOLOGY

THE CURRICULUM

FOR

NEURO-OPHTHALMOLOGY SUBSPECIALTY

2022

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CHAPTER 1

PREAMBLE

1) Introduction and Philosophy

Neuro-ophthalmology is an evolving subspecialty within the field of ophthalmology in Africa, as well as worldwide. The neuro-ophthalmology sub-specialty focuses on the diagnosis and management of visual disturbances and eye movement disorders resulting from neurological disease. Clinical practice of neuro-ophthalmology varies widely. However, neuro-ophthalmological disorders can be broadly classified into afferent pathway or efferent pathway disorders. Neuro-ophthalmology as a subspecialty in the Faculty of Ophthalmology will provide needed manpower with relevant knowledge and skills to plan, and organize resources for the management of related eye diseases in this field.

The neuro-ophthalmology sub-specialty curriculum will follow a training pathway that will enable trainees to develop the competencies required to support the delivery of eye care to patients with more complex and complicated disorders. Trainees will be expected to acquire skills to train at junior residency level to prevent complications arising from poor management of the common disorders as well as manage such complicated cases.

This 36-month subspecialty Fellowship is intended to prepare candidates for a career as a neuro-ophthalmologist with knowledge and skills in the prevention and management of eye disorders resulting from neurological diseases.

2) Vision

To provide trained manpower in neuro-ophthalmology that will meet the needs of the regional and global population.

3) Mission

To train neuro-ophthalmologists with knowledge and skills in the prevention and management of eye diseases in this field in sufficient numbers in order to address the gap of manpower shortage in the delivery of an effective, efficient and qualitative eye health both locally and internationally.

4) Aims and Objectives

- i. To develop manpower for the diagnosis and management of visual disturbances and eye movement disorders resulting from neurological diseases at the specialist level.
- ii. To develop specialists skilled and knowledgeable in the practice of neuro-ophthalmology with particular focus on research and training in eye health system and health services.

5) Expected Learning outcomes

At the end of the subspecialist training in neuro-ophthalmology, the trainee is expected to:

- i. Build on the knowledge, skills, and competencies of the junior residency years and develop into an all-round competent ophthalmologist with generic core competencies in common eye disorders, including administrative, and medical education skills
- ii. Be skilled in taking history and performing physical examination geared towards making appropriate diagnoses of neuro-ophthalmological diseases

- iii. Effectively and efficiently utilise diagnostic tools/services to make diagnoses, develop management plans, and manage other common ophthalmic conditions and refer to other subspecialists as necessary
- iv. Effectively function as a communicator, collaborator, partner, advocate and manager in the discharge of his/her duties and obligations
- v. Exhibit confidence as a trainer and health care manager and confidently be able to establish and develop tertiary level health care and training programmes for neuro-ophthalmological disorders
- vi. Effectively teach and train resident doctors, optometrists, medical students and other allied eye health workers, as well as have the capacity and ability to provide the required mentoring and leadership in an eye care team setting
- vii. Competently and responsibly initiate and conduct basic, clinical, epidemiological and translational research either independently or as a research team member. The trainee is expected to develop and pursue knowledge in and advancement of neuro-ophthalmological disorders through scientific enquiry, clinical research, project design and completion, along with publications and presentations at learned society activities
- viii. Consistently exhibit and demonstrate the highest levels of ethics and professionalism in their relationships with patients and their families, colleagues, allied eye health workers, other stakeholders in the health sector, and the society. The trainee will be expected to have imbibed the skills for maximizing personal growth and career/ life aspirations, and also, incorporating volunteerism/altruism into their life plans.

6) Training in neuro-ophthalmology

The training in neuro-ophthalmology shall take place in accredited training Centers of the College in Nigeria and any other place so designated.

7) Training Admission Requirements

- i. Completion of a minimum of 24 months rotations in general ophthalmology at the Part I level of the National Postgraduate Medical College of Nigeria (NPMCN) or its equivalent
- ii. A pass at the Part I examinations of the NPMCN in ophthalmology or its equivalent

8) Mode of entry into the training programme

A written application to the Faculty of Ophthalmology of NPMCN for admission into the neuro-ophthalmology subspecialty training program by a candidate gainfully employed in an accredited Center.

9) Components of the training

The program aims to train ophthalmologists in the diagnosis and management of common diseases of the eye in the areas of clinical evaluation, use of various investigative procedures, medical treatment, surgical intervention and research. The clinical training involves fellows working in rotation through four of the other six subspecialties (i.e., Cornea & Anterior segment, Glaucoma, and Community and Public Health Ophthalmology together with Ophthalmic plastic surgery) in the first 12 months of their rotation. They will be encouraged to evaluate patients' problems in detail, using logic and clinical data to arrive at an accurate

diagnosis. The trainee will be expected to provide triage services for the full spectrum of neuro-ophthalmology diseases presenting to the Unit.

The major components of the neuro-ophthalmology subspecialty shall be:

- i. **Clinical exposure** will combine outpatient, inpatient and surgical experience. The trainee assumes increasing responsibility for patient care, under the supervision of trainers. They learn to evaluate patients and perform procedures independently, and effectively follow up the cases. In addition to the clinical training, the Fellow is required to participate actively in research, presentations, publications, and in training of other ophthalmology residents and medical students in the Institution.
- ii. **Research exposure** will require trainees to engage in basic, clinical, epidemiological or clinical research and/or clinical trials and descriptive retrospective studies and develop an in-depth working knowledge of the current scientific literature of medical and surgical advances. They are expected to participate in relevant meetings/courses within and outside the National Medical College, as well as those hosted by Local, National or International Ophthalmology societies. Trainees are also expected to participate in any on-going research projects within their training Institution in a basic or clinical field related to their area of interest. Time is allotted appropriately for this experience, and its value is enhanced by careful supervision, availability of laboratory facilities, and access to technical assistance.
- iii. **Teaching** exposure ensures that teaching is an integral part of the fellowship experience. The trainee is expected to be an instructor to other resident ophthalmologists, optometrists, medical students and other allied ophthalmic personnel in the training institution. The trainees are expected to present cases at Grand Rounds and participate as instructors or lecturer at educational activities in their training Institutions through practical and didactic presentations, and improve their techniques of examinations and interpretation of ancillary tests.
- iv. **Eye care policy and management** exposure will be facilitated by involvement in the Public Eye Health activities of the training Institution, Ministries of Health and State eye care programs. Trainees will be expected to be involved in the organisation, conduct and management of the Public Eye Health programs in the State of residence or the nearest State with an eye care program and that of the training Institution including but not limited to satellite eye care facilities, outreach programs, eye camps and community eye health educational campaigns and the Federal or State Ministries of Health.

10) Duration of training

The training duration in neuro-ophthalmology shall be for a minimum of 36 months for a regular resident or as may be decided by the Faculty or the College for other qualifications.

11) Rotations

Table 1

SN	Postings	Minimum duration	Credit units
1	Glaucoma (3months)	3 months	12.5
2	Cornea & Anterior Segment	3 months	12.5
3	Ophthalmic Plastic Surgery	3months	12.5
4	Vitreo-Retina Senior Posting	3 months	12.5
5	Posting in core Neuro-ophthalmology	24months	100

The approved rotations will be in the specified subspecialties described in the Table above. The Log book further highlights the key cognitive, affective and psychomotor skills to be acquired during these rotations. The courses in the core Neuro-ophthalmology postings are as follows:

- i. Vitreo-Retina (2months)
- ii. Intercalated Outside Postings (Neuro-Radiology -1month, Neurology - 3 months, Neuropsychiatry - 1month, Neurosurgery -2 months (7months in total))
- iii. Neuro-ophthalmology (core) postings (15 months) as follows:
 - a. Relevant Anatomy/Physiology of the brain, optic nerve and visual pathway; Neuroanatomy/Physiology of Cranial nerves III, IV, V, VI, VII, VIII – 3months
 - b. Diagnosis and Management of Afferent System Dysfunction – 4months
 - c. Diagnosis and Management of Efferent System Dysfunction – 3months
 - d. Neuro-Ophthalmic Manifestations of Orbital Pathology and Systemic Diseases – 3months
 - e. Investigations in Neuro-Ophthalmology – 1month
 - f. ATLS – 1 week
 - g. Low Vision and Neuro-Rehabilitation – 2weeks
 - h. Epidemiology and Research – 2weeks

12) Syllabus/Themes

General ophthalmology – 1 year

i. Cornea and Anterior segment- OPH 926 (12 credit units)

i) Cognitive Skills:

- (1) To describe the fundamentals of applied anatomy, embryology, biochemistry, physiology, microbiology, pharmacology, genetics, immunology, pathology, and optics with respect to the ocular surface, external eye, anterior segment (including lens).
- (2) To describe, recognize and manage all common conditions affecting the ocular surface, external eye, anterior segment (including lens)
- (3) To understand the indications, preoperative assessment, patient selection, and techniques in pterygium surgery, cataract surgery such as ECCE, SICS &

Phacoemulsification, corneal transplant and refractive surgery, and the management of the associated intraoperative and postoperative complications.

- (4) To demonstrate a detailed understanding of all the basic and advanced diagnostic procedures applicable to the management of conditions of the cornea, external eye, anterior segment, and lens.
- (5) Demonstrate a detailed understanding of design and choice of IOLs, and calculation of IOL power
- (6) Knowledge of cornea cross linking and intra-corneal rings
- ii) Clinical/Technical/surgical Skills:
 - (1) Mastering examination techniques, including bio-microscopy, vital stains of the ocular surface, and special diagnostic testing (e.g., specular microscopy, corneal topography/tomography, biometry, keratometry, high-resolution ultrasonography, anterior-segment OCT, confocal microscopy, and corneal pachymetry).
 - (2) To perform uncomplicated contact lens fitting
 - (3) To perform thin conjunctival flaps (e.g., Gunderson flap) and autografts, and basic non-laser refractive surgery techniques (e.g., relaxing keratotomy).
 - (4) Demonstrate proficiency in corneal repairs and management of multiple anterior segment trauma as well as the medical/surgical management of corneal thinning and perforation, including techniques of pharmacological manipulation; and office procedures such as application of tissue glue and therapeutic contact lenses.
 - (5) Demonstrate proficiency in all types of pterygium /cataract surgery and management of all common intraoperative/postoperative complications, including doing laser capsulotomies.
 - (6) Conduct research relevant to cornea, external diseases, anterior segment and refractive surgeries

ii. Glaucoma OPH 927 (12 credit units)

i) Cognitive Skills:

- (1) To describe the features and management of all forms and types of glaucoma, including the relevant genetics.
- (2) To describe the mechanics of aqueous humour dynamics in the aetiologies of glaucoma (e.g., angle recession, combined or multifactorial glaucoma, traumatic or inflammatory glaucoma, pigmentary dispersion glaucoma) and apply the most advanced knowledge of optic nerve and nerve fiber layer anatomy to describe techniques, methods, and tools for analysing the nerve fibre layer.
- (3) To describe, interpret, and apply the results of perimetry, including, special kinetic and automated static perimetry strategies (e.g., special algorithms)
- (4) To describe the principles, indications and clinical relevance of the findings in gonioscopy
- (5) To describe the clinical features and management of ocular hypotony.
- (6) To describe the results, apply the conclusions, and critically analyse the major clinical trials in glaucoma (e.g., Glaucoma Laser Trial, Normal Tension Glaucoma

Study, and Advanced Glaucoma Intervention Study), as well as describe and use other publications in the management of glaucoma patients

- (7) To describe the principles, indications, and complications of laser treatment in glaucoma.

ii) Clinical/Technical/surgical Skills:

- (1) To perform a comprehensive evaluation of a patient in order to confirm or rule out a diagnosis of any type of glaucoma. This may involve performing and interpreting tonometry, gonioscopy, pachymetry and perimetry etc.
- (2) To manage all common types and forms of glaucoma especially in juvenile and adults, including open angle glaucoma and angle closure glaucoma.
- (3) To perform trabeculectomy, trabeculotomy, trabeculoplasty, surgical iridectomy, combined trabeculectomy and cataract procedures and other simple laser procedures required for the management of glaucoma i.e., laser peripheral iridotomy
- (4) To recognise and manage glaucoma surgery bleb and flat anterior chamber complications
- (5) To conduct research relevant to glaucoma

iii. Ophthalmic Plastic Surgery OPH 929 (12 credit units)

i) Cognitive

- (1) Applied knowledge of anatomy, physiology, biochemistry, embryology, pathology, genetics, immunology, pharmacology relevant to the eyelids, lacrimal apparatus, globe/adnexae and orbit.
- (2) Knowledge of etiology, evaluation and management of all the common pathologies (including chalazion, entropion, ectropion, ptosis, blepharospasm, dermatochalasia, dacrocystitis, orbital cellulitis, proptosis, thyroid eye diseases, inflammatory conditions, trauma, benign/malignant growths, congenital anomalies) involving the eyelids, lacrimal apparatus, globe/adnexae and orbit
- (3) Knowledge of pre-operative and post-operative assessment and coordination of care of patients with oculoplastic or oncological disorders (e.g., systemically ill patient, multi-disciplinary procedures), including understanding and interpreting all relevant ocular and orbital imaging investigations.
- (4) Knowledge of clinically relevant data from international and local research in oculoplasty, orbital reconstructive surgery and ocular oncology.

ii) Technical/surgical Skills:

- (1) To perform all the examination techniques for the diagnosis of oculoplastic and orbital abnormalities. To recognize typical and atypical features and to describe the differential diagnosis, clinical features, and treatment of all common oculoplastic, oncological and orbital diseases, as well as the complications following treatment.
- (2) To perform all the relevant preoperative and intraoperative assessment/measurements of the eyelids, eyebrows, lacrimal apparatus, globe/adnexae and orbit (e.g., intraoperative adjustments).

- (3) To provide comprehensive management for all commonly presenting oculo-plastic and oncological conditions i.e., trauma, entropion, ectropion, ptosis, proptosis, lacrimal duct obstructions and epiphora, tumours, anophthalmic sockets
- (4) To identify orbital pathology (e.g., complex orbital fractures, orbital tumours) on imaging studies and confidently make appropriate interpretations (eg, magnetic resonance imaging, computed tomography, ultrasound)
- (5) To administer botulinum toxin injections
- (6) To perform all commonly done oculoplastic and orbital surgical procedures. These may include but are not limited to the following: eyeball wound repairs, eyelid and facial wound repairs, Tarsorrhaphy, blepharoplasty, canthoplasty, excision biopsies, chalazion surgery, ptosis surgery, entropion/ectropion surgery, simple lid reconstructive procedures, Dacryocystorhinostomy, enucleation, evisceration, exenteration, debulking, anterior orbitotomy and repair of orbital floor fracture
- (7) To be able to conduct research and generate data on oculoplastic and oncological conditions.

IV. Vitreo-retina Posting (2 months)- OPH 932 (8 credit units)

Cognitive Skills

- i. Knowledge of applied anatomy, biochemistry, physiology, embryology, pharmacology, immunology, genetics and pathology relevant to the retina and vitreous.
- ii. Knowledge of retinal examination methods /ancillary investigations and interpretation of findings i.e. Fluorescein/Indocyanine Green angiography ,optical coherence tomography, fundus autofluorescence, ultrasonography, electrophysiological tests.
- iii. Knowledge of pathologic processes that affect the choroid, retina or vitreous.
- iv. Describe the principles of medical and surgical management of vitreoretinal disorders as well as intermediate,posterior and panuveitis. This will include knowledge of the principles, methods and complications of intravitreal injections, laser photocoagulation, photodynamic therapy.
- v. Knowledge of data from all the major international and local clinical trials in the management of vitreoretinal disorders such as the Early Treatment of Diabetic Retinopathy Study(ETDRS)and Central Vein Occlusion Study(CVOS)

Clinical/Technical/Surgical skills

- i) To comprehensively evaluate, recognise, and medically manage all common vitreo-retinal conditions (ie central serous chorioretinopathy, ARMD, diabetic retinopathy, cystoid macular oedema, branch and central vein occlusions, hypertensive retinopathy, sickle cell retinopathy, and refer complex surgical cases such as retinal detachments. Competence in using all the retinal examination methods and techniques (but not limited to indirect ophthalmoscopy with scleral indentation) must be clearly demonstrated.
- ii) To evaluate and treat or refer the etiologically more complex or uncommon cases of posterior uveitis (eg., sympathetic ophthalmia) and endophthalmitis (eg., endogenous).
- iii) Competence in intravitreal injection administrations.
- iv) Application of findings from all the examination and diagnostic procedures(including imaging/electrophysiological procedures) in clinical practice

CHAPTER 2

DOCTOR OF MEDICINE (MD) DEGREE IN OPHTHALMOLOGY

Admission into this MD degree programme is only for medical doctors with MBBS or MBChB degree and are already admitted into residency training programme in Ophthalmology and registered as an associate fellow of the National Postgraduate Medical College of Nigeria and is strictly by:

- i. Having passed Primary FMCOPh Fellowship Examination or Exemption from Primary Examination of NPMCN
- ii. Having passed Part I FMCOPh Fellowship Examination of NPMCN
- iii. The duration of the MD is minimum of 6 semesters post Part I in an accredited training Institution.
- iv. Defense for MD thesis will be conducted by examiners in the Faculty of Ophthalmology as appointed by the National Postgraduate Medical College of Nigeria (NPMCN)

Philosophy

This postgraduate MD programme will be administered by the NPMCN in accredited training institutions. Candidates will focus on the creation of new and innovative knowledge. The MD degree is primarily for individuals with goals in ophthalmology **Research or Teaching**.

The NPMCN Senate oversees the MD degree programmes and its requirements, which entail coursework and independent research. Generally, the programme is for resident doctors undergoing residency training in the Faculty of Ophthalmology, NPMCN and other sister Colleges as approved by the Senate of NPMCN. It consists of course work during residency training in accredited residency training institutions during junior residency training period and first 2 years of senior residency training period in ophthalmology and independent research during the senior residency training period in ophthalmology.

The NPMCN MD degree programme ensures that Residents have a breadth and depth of knowledge in a particular discipline or area and candidate's ability to conduct research is assessed by the preparation of a written thesis.

CHAPTER 3

NEURO-OPHTHALMOLOGY CORE COURSES – 15 months

(1) Anatomy and physiology and Research- OPH 960

Definition and Scope

Neuro-ophthalmology focuses on brain and systemic abnormalities that cause visual disturbances. A Neuro-ophthalmology fellowship provides the candidate with knowledge and detailed clinical skills to diagnose patients with such disturbances.

The practice of neuro-ophthalmology requires an interdisciplinary approach that incorporates knowledge of relevant aspects of basic science, epidemiology, clinical neurology, radiology (focused particularly on CT, MRI, MRA and Contrast Angiography), ophthalmology (including oculo-plastics, pediatric ophthalmology, glaucoma and retina) and ophthalmic diagnostic techniques (such as manual and computer assisted perimetry, color vision testing, contrast sensitivity, prisms, direct and indirect ophthalmoscopy), internal medicine (neurology), psychiatry, visual electrophysiology and ultrasound techniques (Doppler ultrasonography, A and B-Scan). This will be assessed using MCQ and DOPS

Learning Outcomes

At the end of this period, the trainee is expected to have:

Knowledge

a. Epidemiology

Trainees shall be required to:

- Discuss the genetics of specific disorders relevant for neuro-ophthalmology including multiple sclerosis, stroke, migraine and other disorders. [SEP]
- Describe basic principles of medical statistics, including: relative risk, odds ratio, attributable risk, prevalence rate, case control study, cohort study, absolute/relative benefit, risk reduction, number needed to treat, etc

b. Anatomy and physiology

- Describe anatomical structures relating to the afferent and efferent visual pathways
- Describe the surgical anatomy of the eye and orbits
- Discuss the function of the visual system and its control

Topics to be covered include but are not limited to:

Bony anatomy of the orbit, superior and inferior orbital fissure, optic canal, foramina of the skull, anterior, middle and posterior cranial fossa and anatomy of the brain including cranial nerve pathways. Trainees shall also be required to know the anatomy of the visual pathway, supranuclear

and infra-nuclear control centers for ocular motility, vascular anatomy of the brain including the circle of Willis, External carotid artery and its branches as well as the vertebrobasilar system

(2) Diagnosis and management of afferent system dysfunction- OPH 961

Objectives

At the end of this course, the trainee should be able to outline the diagnosis and management of afferent visual pathway disorders such as: optic neuropathy, visual field defects, visual pathway disorders, visual perception disorders etc. Learning will involve self-study, writing comments and engaging in discussion in the virtual learning environment, watching videos and animations and self-evaluation using online quizzes including face to face discussion and didactic lectures

Core Topics of course

- Headache and migraine
- Non-glaucomatous optic neuropathy

Learning Outcomes

At the end of this training the trainee should be able to:

Knowledge

- Differentiate between primary and secondary headache from history taking and examination
 - Demonstrate appropriate evaluation for the investigation of primary and secondary headache and the role of neuroimaging
 - Diagnose and classify primary headaches especially migraine headache
 - Demonstrate appropriate evaluation for assessment of optic nerve function
1. Headache and migraine
 - a. Describe the neurosensory pain pathways for headache
 - b. Describe the concepts of nociception and allodynia
 - c. Describe the pathophysiological concepts of migraine and migraine aura
 - d. Describe the epidemiology of migraine
 - e. Identify and list migraine triggers
 - f. Discuss current migraine treatment guidelines
 - g. Discuss the options for medical management of a patient with migraine headache from diagnosis to treatment and follow-up
 2. Anterior visual pathway
 - a. Describe the anatomy of the anterior visual pathway from the optic nerve head to the visual (striate) cortex including the visual association areas
 - b. Describe the anatomy of the sellar region and the pituitary gland
 - c. Describe the physiology of the pituitary gland and hypothalamo-pituitary axis
 - d. Explain possible reasons for progressive painless vision loss associated with headache
 - e. Explain possible reasons for non-glaucoma related unilateral and bilateral visual field defects e.g., central scotoma, homonymous hemianopia, heteronymous hemianopia, quadrantanopia

- f. Describe the differences between glaucomatous and non-glaucomatous optic nerve head changes
- g. Describe the differences between glaucomatous and non-glaucomatous visual field changes

Clinical skills

Learning through active observation and emulation, practise, and repeating the 'observe/emulate/practise' cycle until the trainees have developed the clinical skills

- Evaluate patients with acute and chronic vision loss
- Identify, describe and quantify afferent pupillary defects
- Identify, describe and quantify optic nerve head abnormalities
- Differentiate between glaucomatous and non-glaucomatous optic nerve head changes
- Describe the typical features, evaluation, and management of the most common optic neuropathies (eg, infectious, demyelinating, ischemic, inflammatory, hereditary, toxic, nutritional, compressive, infiltrative)

Technical skills

Observe and practise each skill repeatedly until learning outcomes are achieved

- Perform direct, indirect, and magnified ophthalmoscopic examination of the optic disc, macula, vessels, and periphery of the retina (eg, recognize optic disc swelling, optic atrophy, neuro-retinitis, optic nerve head vascular abnormalities, and macular abnormalities, such as edema, pigmentary changes, subretinal fluid, retinal vessel abnormalities, pigmentary changes) and use the findings to generate a differential diagnosis.
- Perform visual function tests (eg, color vision testing, Amsler grid, photostress test, contrast sensitivity testing)
- Perform static automated and kinetic perimetry

Determine reliability of visual field results, interpret visual field changes and localize lesions to pre-chiasmal, chiasmal or retro-chiasmal location

(3) Diagnosis and management of efferent system dysfunction- OPH 962

Objectives

At the completion of this course, the trainee should be able to outline the diagnosis and management of efferent visual pathway disorders such as: Horner's syndrome, ocular cranial motor neuropathy

- Differentiate between monocular and binocular diplopia from history taking and examination
- Demonstrate appropriate evaluation for the investigation of double vision and the role of neuroimaging
- Diagnose and classify Nystagmus
 - Nystagmus with vision loss
 - Nystagmus without vision loss

- Brain sites for localizing acquired nystagmus
- Demonstrate appropriate evaluation for assessment of ocular motility disorders and adult strabismus
- Evaluate a patient with abnormalities of pupil shape, size and reactions to light and accommodation and interpret their findings

Knowledge

- Describe in detail the anatomy of the efferent visual pathway
- Detail the anatomical course of the ocular motor cranial nerves and their anatomical relations
- Describe the anatomy of the cerebellum and its ocular motor pathways and its impact on ocular motility
- Discuss supranuclear control of ocular motility and its abnormalities
- Differentiate between infra-nuclear and supranuclear eye movement disorders

Efferent visual pathway

- Describe the parasympathetic pathways for accommodation
- Identify the sympathetic pathways for pupil dilatation
- Describe the aetiopathogenesis of Anisocoria
- Differentiate between the different causes of anisocoria (Horner's syndrome, Adie's pupil, traumatic mydriasis, pharmacological dilatation, third nerve palsy)
- Describe the anatomy of the midbrain, pons and the location of the ocular motor cranial nerve nuclei
- Describe the relations of the ocular motor cranial nerve nuclei and their fascicles from the brainstem to their respective extraocular muscles (supranuclear, nuclear and infra-nuclear pathways)
- Describe supranuclear control of eye movement
- Enumerate the differences between infra-nuclear and supranuclear gaze palsy
- Describe the neuroophthalmological presentation of midbrain lesions (midbrain syndromes e.g., Wallenberg syndrome, Dorsal midbrain syndrome, Weber's syndrome, Benedikt's syndrome etc.) and other abnormalities of the brainstem
- Define and classify nystagmus
- Discuss the aetiopathogenesis of the different forms of nystagmus and nystagmoid movements

Clinical skills

- Take a clinical history in a patient with complaints of double vision
- Perform a complete evaluation of the major ocular motor systems (eg, fixation, pursuit, saccades, convergence, vestibulo-ocular reflex)
- Evaluate anisocoria and diagnose Horner's syndrome, light-near dissociation, Adie's tonic pupil, third nerve palsy
- Recognize aberrant regeneration of the oculomotor nerve
- Differentiate and characterize different types of nystagmus and nystagmoid movements
- Describe and distinguish congenital nystagmus versus acquired nystagmus

Technical skills

- Measure ocular alignment using simple observational techniques (eg, Hirschberg test, Krimsky method)
- Perform cover-uncover testing for tropia
- Perform alternate cover testing for phoria
- Perform simultaneous prism and cover testing
- Measure ocular deviations with prisms
- Perform tests of binocularity and fusion (eg, polarized Titmus stereo test, Worth 4-dot test)

(4) Investigations in neuro-ophthalmology- OPH 963

Objectives

Trainees are required to be knowledgeable about the indications for, use of, and limitations of pharmacological, radiological, and surgical therapies that may be recommended for patients with neuro-ophthalmological disorders. Regular neuro-imaging workshops and conferences (in collaboration with neuroradiologists) are required for a more profound understanding of the indications for, and techniques of, magnetic resonance imaging (MRI), computed tomography (CT) scanning, and endovascular therapeutic neuroradiology as they apply to the practice of neuro-ophthalmology

Knowledge

Describe the indications for obtaining neuroimaging studies, including computerized tomography (CT) scanning, magnetic resonance imaging (MRI), MR and CT angiography, orbital ultrasonography, conventional catheter and digital subtraction angiography (DSA). Describe the indications for and interpret basic echography (ultrasound) of the eye and orbits: A-scan, B-scan and duplex Doppler ultrasonography.

Describe features and evaluation of the less commonly encountered visual field defects (e.g., sectoranopia, checkerboard, monocular temporal crescent).

Describe more advanced aspects of visual field testing, indications, selection, and interpretation (eg, artifacts of automated perimetry, testing, and thresholding strategies). Perform and interpret basic ocular coherence tomography (OCT) imaging of the eye (eg, optic disc, retinal nerve fiber layer, macula)

Describe the indications and interpret basic ocular electrophysiology (eg, visually-evoked potential [VEP], electroretinogram [ERG], electrooculogram [EOG], ocular motility recording techniques). Describe the indications for and interpret basic fundus fluorescein angiography

Clinical skills

Perform basic neurologic screening examination (eg, tandem walk, sensory examination, cerebellar function testing, basic cognitive evaluation)

Technical skills

Interpret neuro-radiologic images in neuro-ophthalmology (eg, interpretation of orbital imaging for orbital pseudotumor and tumors, thyroid eye disease, intracranial imaging modalities and strategies for tumors, aneurysms, infection, inflammation, ischemia), and appropriately discuss, in advance of testing, the localizing clinic-radiological features with the neuroradiologist in order to obtain the best study and interpretation of the results

Perform (and interpret the results of) the intravenous edrophonium (ie, Tensilon) and prostigmin tests for myasthenia gravis; recognize and treat the complications of the procedures

Describe the advantages, disadvantages, indications, and contraindications of special perimetric methods (eg, blue-yellow perimetry, automated kinetic perimetry, motion perimetry, microperimetry)

(5) Neuro-ophthalmic manifestations of orbital pathology and systemic diseases- OPH 964

Objectives

To expose the trainees to a wide range of systemic medical conditions that are common in neuro-ophthalmology practice. Trainees will be expected to gain proficiency in evaluation of pathologies of the eye and orbit and demonstrate an understanding of the pathogenesis, presentation and management of optic neuropathy in different orbital diseases.

Knowledge

Systemic disorders with neuro-ophthalmological complications such as thyroid and other endocrine disorders

Giant cell arteritis and other rheumatologic disorders

Metastatic and para-neoplastic disorders

Coagulation abnormalities and other hematologic disorders

Other systemic conditions include chronic progressive external ophthalmoplegia (CPEO), cerebrovascular disease, pregnancy, AIDS, drug toxicity

Clinical skills

Examine patients with orbital pathologies and localize the lesion to the relevant orbital space (preseptal, orbital septum, superior fissure, inferior orbital fissure, orbital apex, peribulbar, retrobulbar, intraconal, extraconal space etc.)

Assess patients with orbital trauma for fractures and optic nerve injury

Examine patients with orbital space occupying lesions with and without ocular displacement or misalignment

Evaluate, describe and outline management for a patient with ptosis, laophthalmos or lid retraction

Evaluate, describe and outline management for a patient with blepharospasm

Technical skills

Describe and perform temporary and permanent tarsorrhaphy in patients with facial nerve palsy and corneal exposure

Assess ocular motility and alignment in patients with orbital pathology

Perform forced duction test to differentiate restrictive from paralytic

Auscultate for orbital bruit

Interpret the results of temporal artery biopsy in the context of the clinical presentation

Perform temporal artery biopsy (surgical neuro-ophthalmology)

(6) Low vision and neuro-rehabilitation- OPH 965

Objectives

- Trainees will learn to perform low vision assessment of patients
- Trainees will learn the different types of low vision devices; their attributes, advantages and disadvantages and how to prescribe different low vision devices to meet specific needs
- Neurorehabilitation will focus on visual rehabilitation for patients with visual field and mobility disorders following neurological, neurosurgical or neuroophthalmological disorders. Trainees will learn how to assemble a multidisciplinary team for vision and neuro-rehabilitation and to coordinate care between the different rehabilitation professionals.

Knowledge

- Describe the different types of low vision devices
- Outline the steps in low vision assessment
- Discuss the concept of neuro-rehabilitation
- Define orientation mobility training and its relationship to neurorehabilitation
- Explain the concept of quality of life and holistic care model

Clinical skills

- Perform low vision evaluation and prescribe appropriate low vision aids
- Identify and characterize the neuroophthalmological complications of stroke and their impact on activities of daily living and quality of life
- Evaluate the impact of visual impairment on quality of life (vision-related quality of life)

Technical skills

- Establish a multidisciplinary neurorehabilitation team
- Outline and evaluate a neurorehabilitation plan, which includes orientation and mobility training
-

7) Radiology (1month)- Course code from Radiology Faculty

Describe the indications for obtaining neuroimaging studies, including computerized tomography (CT) scanning, magnetic resonance imaging (MRI), MR and CT angiography, orbital ultrasonography, conventional catheter and digital subtraction angiography (DSA).

Describe the indications for and interpret basic echography (ultrasound) of the eye and orbits: A-scan, B-scan and duplex Doppler ultrasonography

8) Neurology (3months)- Course code from Internal medicine Faculty

- Differentiate between primary and secondary headache from history taking and examination
- Demonstrate appropriate evaluation for the investigation of primary and secondary headache and the role of neuroimaging
- Diagnose and classify primary headaches especially migraine headache

Headache and migraine

- h. Describe the neurosensory pain pathways for headache
- i. Describe the concepts of nociception and allodynia
- j. Describe the pathophysiological concepts of migraine and migraine aura
- k. Describe the epidemiology of migraine
- l. Identify and list migraine triggers
- m. Discuss current migraine treatment guidelines
- n. Discuss the options for medical management of a patient with migraine headache from diagnosis to treatment and follow-up
- Myasthenia gravis
- Multiple sclerosis, NMO (Devics), NMOSD
- Stroke
- Sarcoidosis
- Other systemic disorders with neuro-ophthalmic symptoms and signs

9) Psychiatry (1month)- course code to be obtained from Faculty of psychiatry

- Neuro-ophthalmologic manifestations of nonorganic disease
- Ocular malingering and hysteria: diagnosis and management
- Assessment of patients with suspected non-organic visual loss using pattern appearance visual evoked potentials
- Role of visual evoked potentials in the differential diagnosis of functional visual loss
- Pattern visual evoked potentials in the assessment of visual acuity in malingering.
- Neuro-ophthalmic signs and symptoms of hysteria
- Neuro-ophthalmologic manifestations of psychogenic disease.
- Others

10) Neurosurgery (2 months)- course code to be obtained from Faculty of Surgery

1. Discuss intracranial and orbital vascular anatomy of relevance to the neuro-ophthalmologist

- Bony anatomy of:
 - a. Skull and skull base
 - i. Sella turcica
 - ii. Cavernous sinus
 - iii. Anterior cranial fossa
 - iv. Middle cranial fossa
 - v. Posterior cranial fossa
 - b. Bony communications
 - i. Optic canal
 - ii. Superior orbital fissure
 - iii. Inferior orbital fissure
 - iv. Ethmoidal foramina
- Neuroanatomy relevant to neuro-ophthalmology
 - a. Brainstem
 - b. Cerebellum
 - c. Basal Ganglia
 - d. Cerebral hemisphere
- Vascular anatomy
 - a. Arterial anatomy- Circle of Willis
 - b. Venous anatomy - Cerebral venous sinuses (Cavernous sinus, Other dural venous sinus)
- Cerebrospinal fluid - CSF production, flow, drainage and dynamics and CSF composition
- Lumbar puncture with opening pressure, including fluoroscopic guidance

Systemic and Neurologic Disorders Commonly Associated with Neuro-Ophthalmic Manifestations

Topics:

- a. Congenital hydrocephalus
- b. Cranial dysostoses (craniosynostosis)
- c. Skull base malformations e.g., Chiari malformation
- d. Fibrous dysplasia
 - i. Intracranial vascular malformations, diagnosis and neuro-ophthalmologic manifestations
 - 1. Aneurysm
 - 2. Arteriovenous malformation
 - 3. Dural fistula
 - 4. Carotid cavernous fistula (direct, indirect)
 - ii. Orbital and ophthalmic manifestations - Cavernous hemangiomas

Neuro-ophthalmic manifestations of trauma

Traumatic brain injury

- iii. Classification, mechanisms, and principles of management
- iv. Concussion and sports related head trauma
- v. Neurological complications of head injury

1. Post-concussion headache and syndrome

Neoplastic disorders commonly associated with neuro-ophthalmic manifestations - Intracranial neoplasm

Neuro-ophthalmic complications of surgical procedures

- i. Peri-operative visual loss
- ii. Neuro-endovascular procedures
- iii. Skull base surgical and other neurosurgical procedures
- iv. Other procedures

Surgical Procedures of Interest

A. Goal:

- o Describe the principles and complications of common neurological surgical and non-surgical (neurostimulation and chemo-denervation) procedures

Topics:

Surgical and endovascular procedures and their complications

- a. Neurosurgical procedures of relevance to neuro-ophthalmology
 - i. CSF shunting procedures
 - ii. Monitoring of intracranial pressure
 - iii. Pituitary surgery (transphenoidal adenomectomy)
 - iv. Other neurosurgical procedures of interest
- b. Interventional neuroradiology techniques
 - i. Cerebral angiography and venography
 - ii. Embolization and coiling
 - iii. Vessel angioplasty and stenting
 - iv. Intravenous and intra-arterial thrombolysis
 - v. Thrombectomy in acute ischemic stroke

(11) OPH 998 Seminars -6 credit nits

(12) OPH 999 Thesis/Dissertation- 12 credit units

LIST OF CORE COURSES IN NEURO-OPHTHALMOLOGY AND THEIR CREDIT UNITS

Course code	Courses	Duration (months)	Contact academic time (Hrs/Wk = Total Hrs)	Contact Clinical / Surgical time (Hrs / Wk = Total Hrs)	Credit units
OPH 960	Anatomy and physiology and Research	4	4(64)	35(560)	16
OPH 961	Diagnosis and management of afferent system dysfunction	4	4(64)	35(560)	16
OPH 962	Diagnosis and management of efferent system dysfunction	3	4(48)	35(420)	12
OPH 963	Investigations in neuro-ophthalmology: Neuro-imaging, ultrasonography.	1	4(16)	35(140)	4
OPH 964	Neuro-ophthalmic manifestations of orbital pathology and systemic diseases	4	4(64)	35(560)	16
OPH 965	Low vision and neuro-rehabilitation	1	4(16)	35(140)	4
OPH 966	Epidemiology and Research – 2weeks	1	4(16)	35(140)	4
	Neuroradiology posting	1	4(16)	35(140)	4
	Neurology posting	3	4(48)	35(420)	12
	Neuropsychiatry	1	4(16)	35(140)	4
	Neurosurgery	2	4(32)	35(280)	8
	TOTAL				100

MANDATORY COURSES:

(a) College-based courses:

Course code	Course	Duration(months)	Contact academic time in hours	-	Credit units
PMC 951	Research Methodology in Medicine Course	1 week	30	-	2
PMC 952	Health Resources management Course	1 week	30	-	2

PMC 953	Ethics in Clinical Practice	1 week	30		2
PMC 901	Advanced Trauma Life Support (ATLS)	1 week	30		2
	TOTAL				26

(b) Faculty-based courses:

OPH 933	Clinical ophthalmology Revision course	2 weeks	60	-	3
OPH 934	Advanced Community ophthalmology course	1 week +4 days hands-on	30	24 hours	2

ADDITIONAL COURSES:

PMC 998 Seminars 6 credit units

PMC 999 Thesis/ Dissertation 12 credit units

Senior Residents in Neuro-ophthalmology are to rotate through OPH 926, OPH 927, OPH 929 and OPH 932 (**all giving 50 credit units**) in the first 12 months of training. The concluding 24 months will be devoted to NEURO-OPHTHALMOLOGY (having **100 credit units**) as well as 4 College compulsory courses (8 credit units) and 2 Faculty compulsory courses (5 credit units) to achieve **50+100+8+5 +18 =181 Credit units.**

CHAPTER 4

CERTIFYING EXAMINATION OF THE COLLEGE

4.1 Application for College Certifying Examinations

The Fellowship Examinations are held twice a year in March/April/May and September/October/November. A call for application is published in at least one of the National Daily newspapers and College website in December and June for the March/May and September/November examinations respectively.

Candidates are advised to watch out for and comply with the examination application requirements as outlined in these advertisements.

4.2 Assessment methods for MD Degree

These will include practical exercises, assignments and tests, Formative assessment, Summative assessment, Thesis presentation and thesis defence examination will be administered at the end of the course.

This thesis defence will take place at least 6 months before the Part II Final for FMCOp.

1) Examination and formative Assessment format

i. Mode of formative assessment:

- i) Continuous assessment activities recorded and scored in the purposive specialty log books.
- ii) One essay on a relevant neuro-ophthalmology topic every 3 months (minimum 6 months)

ii. Eligibility for final examination

- i) Training for the stipulated minimum duration
- ii) A logbook indicating that the needed training has taken place
- iii) Submission of a dissertation in relevant topic in neuro-ophthalmology. The proposal must have been approved at least 12 months before the Fellowship examinations date. The supervisors must meet the requirement for accreditation of a training centre

4.5 Part II Fellowship Examination

The Part II Examinations is designed to complete the assessment of professional competence in ophthalmology before the award of the Fellowship in Ophthalmology (FMCOp). Candidates are eligible to write the examination at least by the 36th month of senior residency training.

4.5.1 Dissertation Proposal Preparation and approval: The dissertation proposal should have at least 2 supervisors one of whom must be a Fellow of the Faculty and agree to critically supervise the design, collection of data, analysis of data and general write up of the dissertation. Submit written attestations by the supervisors indicating their willingness to supervise the project for the dissertation

The criteria to qualify as a supervisor is as the prevailing approval by the Faculty and the College. The proposal should be considered in a departmental seminar and approved by the department before sending to the ethical review board.

Approval from the relevant institutional review board or ethical approval for the study should be obtained before registration of the dissertation proposal with the College.

Exams shall be done not earlier than 12 months after proposal for dissertation has been approved by the College

The format for the Proposal and the Dissertation book is as in the main Faculty Curriculum and as approved by the College.

4.5.3 Components of the Part II Fellowship Examinations

The Part II Fellowship Examinations shall consist of:

- a) A comprehensive oral examination on the candidate's dissertation. The "Dissertation orals" shall focus on the candidate's accomplishment of those objectives of the dissertation earlier stated in this handbook.
- b) An oral examination (VIVA VOCE) consisting of two sections:
 - i) General Ophthalmology where the candidate is expected to meet a set of at least two examiners to answer THREE questions in general ophthalmology over a 30-minute period
 - ii) Neuro-ophthalmology: where the candidate is expected to meet a set of at least two sub-specialists to answer SIX questions in the sub specialty over a 60-minute period

The ORALS (VIVA VOCE) will cover the following components:

Principles of Ophthalmology- 10

Medical, Tropical and Surgical Ophthalmology including pathology in candidates Subspecialty area (cornea and anterior segment) -70

Community Ophthalmology -10

Management and other soft Skills- 10

Oral (Viva Voce)

The purpose of Viva Voce is to cover as wide a field as possible with the candidate. Each candidate is subjected to 60-90 minutes oral examinations dealing with principles of surgery, pre-and post-operative management, surgical pathology, diagnostic modalities and operative surgery mostly directed at the subspecialty of interest.

The Standard setting method for Orals - Borderline group method should be used to obtain the pass score.

4.5.4 Classification of Examination Results

To pass the examination, a candidate must:

- a) Have his/her dissertation accepted at *P* or *P+* level. **OR Passed MD Thesis defense at least 6 months earlier.**
- b) Pass the Orals which is the Viva Voce
- c) Conditions for Provisional Pass, Referral in Orals, Referral in Dissertation and Fail
 - i. A candidate whose dissertation needs some significant corrections, i.e. *P-* level pass, but who had passed Orals shall have a Provisional Pass.

- ii. The corrections of the dissertation shall be made within three months and must be satisfactorily vetted by one of the examiners before it can be accepted. Once accepted, the provisional pass is converted to a full pass by the College.
- iii. A candidate who has his/her dissertation accepted as *P* or *P+* level but fails in Orals shall be referred in the Orals only.
- iv. A candidate who scores a P-level pass in the Dissertation and fails the Orals shall be deemed referred in Orals with Provisional Pass in Dissertation.
- v. The candidate would be required to make the corrections in the book within 3 months after the exams and if satisfactory to the examiners, will be expected to repeat only the Orals. However, if the dissertation remains unacceptable to the examiners, the candidate would be required to sit both the dissertation and the Orals.
- vi. A candidate, having passed the Orals but whose dissertation needs major restructuring, i.e. *P-1* level, shall be referred in the Dissertation only.
- vii. A candidate whose dissertation needs major restructuring, i.e. *P-1* level and also failed the Orals is deemed to have failed the entire exam.

Pass: means a pass or provisional pass in dissertation and a pass in Oral examinations

4.5.5 Publication of the Results

The results of the Fellowship examinations in Ophthalmology are published by the College Registrar on approval by the Senate

4.5.6 Correspondence

The National Postgraduate Medical College of Nigeria or the Faculty of Ophthalmology does not normally enter into correspondence or discussion in respect of the details of a candidate's performance in the examination.

4.5.7 Designation of Fellowship in neuro-ophthalmology

- iii. The designation of a fellowship in Neuro-ophthalmology of the College shall be: FMCoph (Neuro-ophthalmology)

CHAPTER 5

ACCREDITATION OF TRAINING INSTITUTIONS GUIDELINES

5.1 Training Institution eligibility criteria

Shall meet the requirements of the Faculty of Ophthalmology of NPMCN training requirements in Comprehensive ophthalmology

Facility and equipment: inclusive of in-hospital radiology, community medicine, basic biochemistry, haematology, microbiology and ophthalmic histology services with the requisite manpower

Accredited comprehensive ophthalmology services

Manpower: at least one Neuro-ophthalmology specialist with a minimum of 5 years post fellowship OR a Comprehensive Fellow who has minimum 10 years of experience of running the service.

Case load:

Minimum number of procedures

Clinic load of a minimum number of cases per week/month per trainee

5.2 UNIFORM CRITERIA/GUIDE FOR ACCREDITATION

The Senate of National Postgraduate Medical College of Nigeria at its meeting of 3rd December 2015 approved Uniform Criteria /Guidelines for Accreditation of Training Institutions as follows:

BASIS

The College recognizes that the training of specialist requires

1. Qualified and experienced personnel
2. Appropriate infrastructure
3. A well-structured training programme that recognizes modern trends of training and assessments
4. Opportunities and evidence of acquisition of skills
5. Access to up-to-date information
6. Regular feedback and evaluation from trainers and trainees

PHILOSOPHY: The process must be:-

➤ Fair

Done when the institution is ready

➤ Transparent

What is being assessed and persons assessing is known to all

➤ Objective

Minimal bias in the choice of the accreditors – usually not from the institution of affiliates

➤ Instructive

Feedback given to heads of Institutions

➤ Monitored

Reaccreditation done after a clearly defined period – 5 years (Full), 2 years (Partial)

DEFINITIONS AND WEIGHTING

MANDATORY REQUIREMENT.

1. Qualified personnel

The College approved that the basic qualification for training is the Fellowship of College (by examination or election but not honorary). The individual must have had at least 5 years' experience working in a training institution and must be financially up-to-date. It is also expedient that departments in Institutions should have a good mix of the College training in the country so that trainees will have the maximum benefits of current rules and regulations governing their training. Weighting should be 15% of total accreditation score.

2. Appropriate Infrastructure

This is a major pillar without which training cannot take place. What is appropriate will be defined by faculties. But facilities must be well constructed and maintained with the basic amenities

- a. light
- b. water
- c. waste disposal

Available and with adequate backup. These includes

- a. wards
- b. out patients clinic
- c. laboratories
- d. theaters
- e. radiological suites, etc

The weighting shall be a minimum of 10% of total accreditation scores. This can be sub-divided into core infrastructure (5%) and support infrastructure (5%)

3 Equipment

The College noted that equipment is an essential component in the acquisition of skills and competence. The minimum equipment needs will be determined by faculties and the procedure/log book will be necessary in assessing this component. The weighting shall be a minimum of 20% of total accreditation score.

4. Structured training programme:

The College has approved curricula and required competencies that trainees are expected to acquire. It is expected that institutions have a well-publicized (every trainee should have it in writing) structured programme which faithfully implemented and evaluated by a departmental residency committee. This programme must be seen by the accreditation team. Weighting should be 15% of total accreditation score.

5. Opportunities/ Evidence of skill acquisition

In recognition that our profession is an apprenticeship, all trainees must be provided with the opportunities of acquiring the necessary skills to be competent as a specialist. Records of such must be seen. This includes a procedure registrar, theater list and log book. Weighting should be 15% of total accreditation score.

DESIRABLE REQUIREMENT

6. Access to new information

This is a crucial element in making our trainees lifelong learners. It is therefore expected that there should be institutional support for trainees to attend updates, revisions, conference and seminars. It is also expedient that trainees acquire the skills at making presentation at departmental meetings and other scientific or professional. The library and the internet are veritable sources of information and it is expected that training institutions have such facilities accessible to the trainees. Evidence of all these must be seen. Weighting should be 15% of total accreditation score

7. Regular feedback and evaluation:

Evaluation is an important aspect of training. It is recognized that assessment can be formative /continuous or summative. The College traditionally have carried out summative examinations at the end of each part. However, training requires regular feedback from trainers to trainees and vice versa. Mentorship builds on the concept of regular evaluation, feedback, appropriate guidance and counseling of trainees. A good training programme must have these inbuilt and faithfully carried out. Weighting should be 10% of total accreditation score.

Total score is 100% or 100 points

TABLE 7: ACCREDITATION TABLE OF REQUIREMENTS AND GRADING

No	Requirement	Inadequate 0	Partially Adequate 7.5	Full Adequate 15
1.	Qualified and experienced personnel a. Prescribed number (full time/Part time) b. prescribed trainers: trainees ratio c. support personnel (15 Points)			
2.	Appropriate infrastructure a. basic: water, light, sewage etc b. core departments presents c. support departments presents (10 Points)			
3	Equipment a. core equipment b. support equipment (20 Points)			
4	Well-structured training programme a. seen by all b. content (lectures, tutorial , bedside sessions) (15 Points)			
5	Opportunities/ Evidence of skill acquisition a. Procedure Register b. Theater List c. Log Book (15 Points)			
6	Access to new information(15 point) a. library b. Internet (15 Points)			
7	Regular feedback and evaluation (10 Point)			
8	TOTAL			

- < 0=49 (Scores less than 50%) - Accreditation Denied**
≥50-74 (Scores equals to 50% and Less than 75%) - Partial Accreditation for 2 years
>75-100 (Scores equals or greater than 75% and above - Full Accreditation for 5 years

2. Effectiveness/function/role of visiting Consultants

- i. A visiting Consultant should have a minimum of 5 years post Fellowship experience.
- ii. No training should take place in any institution without permanent consultants on ground.
- iii. There must be documented evidence of activities of a visiting Consultant that residents are being supervised by him/her.
- iv. For the purpose of accreditation the full time equivalent should be as follows:
2 visiting Consultants to 1 Full time Consultant.

3. Period of Accreditation

- i. Partial accreditation should last for 2 years. Within the period of the Partial accreditation, one monitoring visit should be made to the institution.
- ii. Full accreditation should last for 5 years. Within the period of the Full accreditation, two monitoring visits should be made to the institution.

4. Effective Date of Accreditation

The effective date for existing accreditation should be with effect from the date of visitation, irrespective of the time the Senate approves the report.

The effective date for new accreditation should be from the date of Senate approval.

5. Trainers/trainee ratio

The ratio of Residents to consultants should be minimum of 3:1 or Maximum 4:1. That is, One (1) Senior Registrar and Two (2) Registrars OR Two (2) Senior Registrars and Two (2) Registrars to one Consultant.

6. The number of Consultants is not the sole determinant for accreditation status, either as partial or full.

Every other criteria are taken into account to arrive at the verdict of either Partial or Full accreditation.

1. For any re-accreditation visit, the report of the previous accreditation visit should be made available to the current nominated panel member, to enable them to compare notes and ensure that progress is being made.

5.3 SUMMARY OF ACCREDITATION VISIT:

Should accompany the accreditation report and in formats approved by the College and the Faculty and contained in the main Faculty Curriculum