NEUROLOGY

Residency Training Program
Leading to the degree of

MD Neurology (MD)

SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY
ISLAMABAD

CURRICULUM

MD Neurology

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Note: This is an evolving document and new changes will be done as per requirements/ needs of the newly developed MD Neurology program to make it at par with HEC/ international requirements

TABLE OF CONTENTS

ROAD MAP OF MD Neurology
(A Brief Summary)

University offer a 06 year MD program in the field of Neurology. This program intends to attract candidates that have an interest in Neurological diseases, pathologies and related research methodologies. The curriculum focuses on formal teaching & training as well as practical fieldwork.

This MD Neurology program aims to train and equip the post-graduate students with all the necessary knowledge & skills, at par with international standards, required to be a leader in the field of oral and maxillofacial surgery. The candidates, upon graduation, will be expected to demonstrate a high level of expertise in the field of neurology.

COURSE DESCRIPTION:

A total of one hundred and twenty eight (146) credit hours of instruction and supervised activities are distributed over six years academic period. This comprises approximately 1834 contact hours of instruction including formal didactic, clinical, research and laboratory experience.

MD neurology program will comprise of 6 years.
Induction into program will be done as per University regulations after passing he university MD Part 1 (Medicine and Allied) and interview.

- 2 years in Internal medicine
- Mid Term Assessment (MTA) Examination
- 4 years in structured training in Neurology including rotations
    - 3 Years in Neurology
    - 1 Year Rotations
        - Neurosurgery ……..2 months
        - Electrophysiology……3 months
        - Psychiatry……2 months
        - ICU…….2 months
        - Eye……1 month
        - Radiology……1 month
        - Rehabilitation……1 month
- Synopsis and Thesis submission
- Defense of Thesis
- Final Examination
        - Written Examination
        - Long and Short Cases

- OSCE

- Award of MD Neurology Degree

- **Requirements of MD Neurology Degree**

  - Fulfillment of University requirements for postgraduate study.
  - Six (6) years of consecutive full time advanced study and clinical training.
  - Complete and approved master's thesis based on original research during the course of study in an area related to specialty, suitable for publication in a reputable dental journal.
  - Must complete all didactic & clinical work in the required curriculum and satisfactorily pass all the University examinations.
  - A minimum of 60% must be earned in all work/examinations attempted in the master's program. A grade below this will require re-examination.

  A complete road map for postgraduate MS/MD/MDS can be seen on University website at http://www.szabmu.edu.pk/content/downloads/road-map-for-postgraduate-residents.pdf

INTRODUCTION

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The residency program in Neurology is a six-year course covering all aspects of Neurological diseases and leading to the degree of MD Neurology.

This curriculum has been developed on the basis of SPICES model which is indicative of the competencies required at the varying levels of training within the specialty together with the knowledge, skills and attitudes achieved by the trainee in acquiring those competencies. The training has been based on the current thinking and the requirements for

- Greater protection of the public interest by providing clear information as to the level of training achieved.
- Improved access to specialty training than general practitioners.
- Greater flexibility of training through the availability of multiple instructors.
- Producing a competent workforce with the appropriate skills and knowledge necessary to meet the varying levels of treatment complexity, as well as considering the relative need and demand of potential patients.
- Acquire the experience to carry out research projects, critically evaluate scientific publications and communicate clinical and research papers in journals and conferences.

RATIONALE

RATIONALE:

Need of program

This training program is structured keeping in view the need of the society. Following needs are identified through formal and informal discussion with the stakeholders.

- Deficiency of the quality health care providers to public especially in remote areas in the field of oral and maxillofacial surgery.
- Dearth deficiency of competent faculty in the field.
- Deficiency of state of the art oral and maxillofacial surgery training center.

Purpose of training

The purpose of this curriculum is to guide the training of an individual to the core level of competence required for specialist and consultant. This training will produce consultant who are specialists in their field.

Context of Training

To provide an organized educational program with guidance and supervision, a structured training program will be followed so that each trainee is exposed to different aspects of the subject and acquires special knowledge and skill as expected in this program. The training will provide a basis for the candidate to develop into a lifelong learner who is capable of self-reflection and self-directed learning. It will provide a basis for further ongoing development in the field.

Duration of training

The program leading to MD Neurology will be of 06 years full time.

AIMS & OBJECTIVES

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Aims of Training

The aim of six years MD program in Neurology is to train residents to acquire the competency of a specialist in the field of Neurology so that they can become good teachers, researchers and clinicians in their specialty having requisite knowledge, attitude and skills after completion of their training.

GENERAL OBJECTIVES

MD Neurology training should enable a student to:

Access and apply relevant knowledge to clinical practice:

- Maintain currency of knowledge
- Apply scientific knowledge in practice
- Appropriate to patient need and context
- Critically evaluate new technology

- Safely and effectively performs appropriate clinical skills & procedures:
  - Consistently demonstrate sound clinical skills
  - Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training
  - Demonstrate manual dexterity required to carry out procedures
  - Adapt their skills in the context of each patient and procedure
  - Maintain and acquire new skills
  - Approach and carries out procedures with due attention to safety of patient, self and others
  - Critically analyze their own clinical performance for continuous improvement
- Design and implement effective management plans:
  - Recognize the clinical features, accurately diagnose and manage neurological problems
  - Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination
  - Formulate a differential diagnosis based on investigative findings

- Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs
    - Recognize disorders of the nervous system and differentiate those amenable to medical treatment
    - Effectively recognize and manage complications
    - Accurately identify the benefits, risks and mechanisms of action of current and evolving treatment modalities
    - Indicate alternatives in the process of interpreting investigations and in decision-making
    - Manage complexity and uncertainty
    - Consider all issues relevant to the patient
    - Identify risk
    - Assess and implement a risk management plan
    - Critically evaluate and integrate new technologies and techniques.
- Organize diagnostic testing, imaging and consultation as needed:
    - Select medically appropriate investigative tools and monitoring techniques in a cost-effective and useful manner
    - Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs
    - Critically evaluates the advantages and disadvantages of different investigative modalities
- Communicate effectively:
    - Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with surgery in ways that encourage their participation in informed decision making
    - Communicate with the patient (and their family) the treatment options including benefits and risks of each
    - Communicate with and co-ordinate health management teams to achieve an optimal surgical environment
    - Initiate the resolution of misunderstandings or disputes
    - Modify communication to accommodate cultural and linguistic sensitivities of the patients

- Recognize the value of knowledge and research and its application to clinical practice:
    - Assume responsibility for self-directed learning
    - Critically appraise new trends in Neurology
    - Facilitate the learning of others
- Appreciate ethical issues associated with Neurology:
    - Consistently apply ethical principles
    - Identify ethical expectations that impact on medico-legal issues
    - Recognize the current legal aspects of informed consent and confidentiality
    - Be accountable for the management of their patients.
- Professionalism by:
    - Employing a critically reflective approach to Neurology
    - Adhering with current regulations concerning workplace harassment
    - Regularly carrying out self and peer reviewed audit
    - Acknowledging and have insight into their own limitations
    - Acknowledging and learning from mistakes
- Work in collaboration with members of an interdisciplinary team where appropriate:
    - Collaborate with other professionals in the selection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type
    - Develop a care plan for a patient in collaboration with members of an interdisciplinary team
    - Employ a consultative approach with colleagues and other professionals
    - Recognize the need to refer patients to other professionals
- Management and Leadership
    - Effective use of resources to balance patient care and system resources
    - Identify and differentiate between system resources and patient needs
    - Prioritize needs and demands dealing with limited system resources.
    - Manage and lead clinical teams
    - Recognize the importance of different types of expertise which contribute to the effective functioning of clinical team

Health advocacy:

- Promote health maintenance of patients
- Advocate for appropriate health resource allocation

Learning Objectives

On completion of training, the trainee will be able to achieve following aptitudes.

Knowledge

- Demonstrate knowledge of clinical aspects of basic sciences as applied to neurology.
- Demonstrate knowledge of the etiology, pathology and clinical presentations of neurological diseases.
- Demonstrate knowledge of the impact of systemic diseases on nervous system.

Attitude

- Demonstrate a professional and ethical approach to patient care.
- Demonstrate a professional attitude to all the members of the team.
- Demonstrate full and clear understanding of equality and diversity legislation as it applies to the workplace and to professional practice.

Skill

- Take history and conduct clinical examination and investigations that allow collection of information needed to evaluate the patients with neurological diseases.
- Determine the differential, provisional and definitive diagnosis by interpreting and correlating findings from the history, clinical &

radiographic examination together with other diagnostic tests.

- Devise treatment plans specific to the needs and expectations of individual patients.
- Demonstrate competency in teaching methods, use of information technology, appraisal and assessment techniques and development of appropriate learning methods for lifelong learning.
- Show evidence of ability to undertake research.

ENTRY CRITERIA

ENTRY CRITERIA:

Eligibility to apply for MD Neurology

- Candidate must possess MBBS or equivalent degree and one year house job from PMDC recognized Institutions.
- Permanent valid registration with PM&DC.
- Declared successful in MD Part-I for University programs.
- In case of foreign candidate, valid registration with Medical Council of their country of origin must be produced.

Required Documents

Attested photo copies of the following documents must be attached with application form:

- Computerized National Identity Card (CNIC)
- Domicile certificate
- Matric/O Level, FSc/A Level, Certificates or equivalent
- MBBS degree with detail marks certificates of all professional
- MBBS Attempts certificates of all professional
- NEB pass certificate (for foreign graduates)
- House Job certificates
- PMDC valid permanent registration certificate
- MD Part-I passing certificate
- Experience Certificates (if any)
- Migration Certificate (To be produced at the time of admission)

Admission Procedure

- Details of admission procedure is available on university website at http://www.szabmu.edu.pk/admission/postgraduate-admission

CONTENT OF LEARNING:

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The program outline addresses both the knowledge needed in neurology and allied medical specialties in its scope. A minimum of six years of formal training through a graded system of education as specified will equip the trainee with knowledge, skill and attitude at its completion to be able to practice basic medicine and neurology competently.

The topics are considered as under:-

1. Specialized Training in Neurology

Headache

- Ability to evaluate and manage people with headache & facial pains.
- Clinical features, differential diagnosis and specific pharmacological and general treatment of the causes of headache and facial pain:
- Investigations: role of brain scanning, urgent blood tests, lumbar puncture
- Disorders of consciousness
- Ability to assess the unresponsive patient and to formulate plan of investigation and management.
- Anatomy and physiology of consciousness, and the pathophysiology of disorders of consciousness: definitions, causes, pathophysiology, clinical features and prognosis of persistent vegetative state, locked in state and brainstem death: legal issues relating to disorders of consciousness: assessment of patient with disordered consciousness: use of tests for brainstem death: interpersonal skills for relating to management of the family of people with disorders of consciousness

Disorders of Sleep

- Ability to evaluate and manage people with sleep disorders
- Narcolepsy, daytime hypersomnolence, parasomnias, obstructive sleep apnoea, effects of neurological conditions on sleep: indications, scope and limitations of the sleep laboratory: effects of sleep on the EEG: principles of physical and pharmacological treatment: driving regulations: consequences and complications of sleep disorders
- Disorders of higher function & behaviour
- Ability to evaluate and manage people with disordered higher function & behaviour.

- Understanding of memory, language, visuospatial function & behaviour: definition and epidemiology of dementia; pathology and clinical features of individual dementias; relevant investigations; specific treatments; genetic aspects; risks and costs of investigations; role of neuropsychological evaluation (inc dementia and mood scales): evaluation of competency: community and support services

Epilepsy

- Ability to evaluate and manage people with epilepsy.

- Differential diagnosis of paroxysmal and transient events: scope and limitations of investigations: use of anti-epileptic drugs: treatment of refractory seizures: serial seizures and status epilepticus: role of epilepsy surgery: awareness of issues related to women and pregnancy, driving, vocation: sudden death: psychological and social consequences of epilepsy especially teenagers

Cerebrovascular Disease

- Ability to evaluate and manage people with stroke.

- Cerebral circulation and its determinants: pathophysiology of cerebral infarction, cerebral haemorrhage, subarachnoid haemorrhage, cerebral venous thrombosis & vascular dementia: epidemiology, risk factors and their management: features of stroke /TIA, intracranial haemorrhage and venous thrombosis: investigation and management of acute stroke and TIA, the role of medical and surgical interventions: role of evaluation scales: cerebral aneurysm and AVM; interventional, surgical and radiotherapy treatment: multidisciplinary stroke care, organization of stroke units, nutrition after stroke, rehabilitation techniques, community stroke care

- Tumours of the NS, neurological complications of systemic cancer, complications of treatment of cancer

- Ability to evaluate and manage people with tumours of the NS or effects of systemic tumours or their treatment.

- Neuropathological classification of brain tumours: clinical features of the common tumours of the nervous system including malignant meningitis: clinical features and immunology of paraneoplastic syndromes: benefits and risks of therapies including surgery and radiotherapy: neurological complications of chemotherapy and radiotherapy

Infections of NS

- Ability to evaluate and manage people with infections of NS

- Principles of neurological infectious disease: clinical features of these diseases and their causes: diagnostic techniques and their appropriate use: anti-microbial therapies and their use: the importance of liaison with infectious disease physicians, microbiologists, public health and occupational health medicine in relation to neurological infections

CSF Disorders

- Able to evaluate and manage people with disorders of CSF
- CSF composition and dynamics; anatomy and radiology of the ventricular system; genesis of hydrocephalus;
- biochemistry and immunology of CSF;
- blood brain barrier;
- indications, techniques, & contraindications of CSF examination:
- methods of intracranial pressure monitoring: treatments of raised intracranial pressure, management of shunts

Demyelination and vasculitis

- Ability to evaluate & manage people with demyelinating & vasculitic disorders
- Biology of demyelination & vasculitis: clinical features of multiple sclerosis, related demyelinating disorders and vasculitic and arteritic disorders: management of specific impairments and disabilities arising in MS: role of disease modifying drugs, symptomatic treatments and therapies

Immunological Disorder and Nervous System

- Ability to evaluate & manage people with immunological disorder caused by disease or treatment.
- Principles of immune responses in relation to the NS: immunological basis underlying auto-immune neurological disease: clinical features of these diseases: diagnostic techniques and their appropriate use: immuno-suppressive and immunomodulatory therapies: their actions, side effects and indications

Parkinsonism & Movement Disorders

- Ability to evaluate & manage people with Parkinsonism & movement disorders
- Clinical features and differential diagnosis of parkinsonism, chorea/athetosis, dystonia, tics and tremor: role of investigations in diagnosis and treatment: treatment of movement disorders: role of neurosurgical interventions
- Motor neuron disease
- Ability to evaluate & manage people with motor neuron disease
- Clinical features and differential diagnosis of motor neuron syndromes: disease modifying and symptomatic treatments: special issues of breaking bad news and prognosis: palliative care aspects

Metabolic & Toxic States

- Ability to evaluate and manage people with metabolic/toxic state
- Biochemistry and neuropathology of exposure to alcohol and other recreational drugs (cocaine, amphetamine, opiates), heavy metals, pesticides and therapeutic agents: clinical features of alcohol, cocaine, opiate, amphetamine neurotoxicity; of Pb, Hg, Mn, CO, NO and organophosphate poisoning; of therapeutic agents neurotoxicity (e.g. vincristine, lithium, radiation):
- Role & value of blood and urine toxicology, imaging and neurophysiology: assessment of other organ damage: psychiatric morbidity associated with substance abuse: clinical features and management of hyper and hypo-thermia, sodium, potassium, calcium and acid base disorders
- Disorders of the visual system
- Ability to evaluate and manage people with disorders of the visual system
- Applied anatomy and physiology of the visual and oculomotor systems: clinical evaluation of the eye and adnexae, vision (acuity, fields and high function): clinical features & conditions which may affect these systems: driving regulations

Disorders of Cranial Nerves

- Ability to evaluate and manage people with disorders of cranial nerve function, anatomy of the skull base, particularly the orbit, cavernous sinus, pituitary fossa, foramen magnum and jugular foramen: pathological processes involving cranial nerves and their central connections: clinical features & clinical assessment of cranial nerve function: management of cranial nerve disorders including multidisciplinary approaches to visual, hearing & balance, speech & swallowing disorders

Disorders of Spine, Spinal Cord, Roots and Spinal Injury

- Ability to evaluate and manage people with disorders of the spine, spinal cord and roots and the acute & chronic consequences of acute spinal cord injury including effects of paralysis, autonomic dysfunction and sensory loss
- Anatomy of the spine, spinal cord, roots: clinical features of spinal cord, root and cauda equina syndromes: indications for urgent investigation: potential and limitations of spinal CT, MRI, myelography and spinal angiography: emergency management of spinal cord or root compression, of spinal injury management of neck & low back pain and sciatica

Disorders of Peripheral Nerve

- Ability to evaluate and manage people with disorders of peripheral nerves (including plexus lesions)
- Anatomy and pathology of peripheral nerves: clinical features & investigation of genetic and acquired axonal and demyelinating neuropathies, traumatic & entrapment neuropathies and plexopathies: management of Guillain-Barré syndrome and other severe paralysing neuropathies: general management of acute neuromuscular paralysis]
- Disorders of autonomic system

- Ability to evaluate and manage people with disorders of the autonomic nervous system (ANS)
- Anatomy and physiology of ANS. clinical features of ANS disorders alone and as part of other condition e.g. multisystem atrophy: investigations including autonomic function tests: pharmacological and physical managements of urinary retention, erectile disorder, constipation, postural hypotension, autonomic dysreflexia

Disorders of Muscle

- Ability to evaluate and manage people with disorders of muscle
- Clinical features and investigation of genetic & acquired disorders of the neuromuscular junction and voluntary muscle including periodic disorders and disorders of energy metabolism (e.g. mitochondrial disorders

Pain

- Ability to evaluate and manage people with neurological disorders causing pain and common non neurological causes of pain including musculoskeletal
- Theories of pain generation: pain patterns in neurological and systemic diseases: effective use of pharmacological agents and other measures for pain relief including nerve blocks, TNS, acupuncture, & neurosurgical interventions: role of Pain Clinic: psychological and social effects of chronic pain

Paediatric Neurology:

Epilepsy

- List the common causes of seizures in the infant, child and adolescent
- Describe the management of status epilepticus
- Describe the evaluation and management of new onset and recurrent seizures, including febrile seizures
- Recognize epilepsy syndromes and their prognoses
- Distinguish seizures from nonseizure events, e.g. syncope, jitteriness, Breath-holding spells

Altered Level of Consciousness

- Describe the major disease categories that cause lethargy and coma
- Diagnose brain death in children and the persistent vegetative state Headache
- Describe the features of headache in migraine, increased intracranial pressure, and tension
- Describe the evaluation and therapeutic approach Psychomotor Retardation and Behavioral Problems

- Describe the approach to the child with learning disability, delayed speech, mental retardation, impaired attention, and behavioral problems

Neonatal Neurology

- Discuss the evaluation and treatment of common disorders in the term and preterm infant, including intracranial and intraventricular hemorrhage, neonatal encephalopathy, neonatal seizures, and periventricular leukomalacia.

Neurodegenerative Disorders

- Discuss the presentation, evaluation and therapeutic approach to lysosomal storage disease, peroxisomal disorders, mitochondrial disorders, amino acid disorders and other metabolic and genetic disorders

Motor Unit Disorders

- Describe the presentation and clinical course of disorders of the motor unit to include anterior horn cell (SMA), peripheral neuropathy (hereditary and non-hereditary, CMT), demyelinating (Guillain-Barre syndrome), neuromuscular junction and muscle disorders (Duchenne Muscular Dystrophy, Myotonic Dystrophy)

Upper Motor Neuron Syndromes

- List the major causes of stroke in childhood and describe evaluation and therapeutic options
- Describe causes, evaluation and therapy of cerebral palsy
- Discuss the etiology and complications of a child with spinal dysraphism, hydrocephalus
- Discuss the etiology and complications of a child with brain malformation
- Dicuss the etiology and complications of a child with traumatic spine and brain injury
- Movement Disorders
- Discuss the differential diagnosis of tic (including Tourette Syndrome), chorea, ataxia, and dystonia
- Describe medications that can induce movement disorders Neoplastic Disorders
- Discuss the most common tumors of the neural axis in childhood (particularly those of the posterior fossa) ; the presenting symptoms and diagnostic evaluation

Infectious and Inflammatory Disorders

- Discuss the most common infections of the neural axis in childhood (meningitis, encephalitis) and the evaluation and treatment
- Discuss ADEM (acute disseminated encephalomyelitis) and MS in children

Neurocutaneous Syndromes

- Discuss the common disorders and the clinical manifestations Special Senses
- Describe disorders of the visual and hearing system, acquired and congenital

Clinical Neurophysiology:

- Basic Neurophysiology: Membrane properties of nerve and muscle potentials (resting, action, synaptic, generator), ion channels, synaptic transmission, physiologic basis of EEG, EMG, evoked potentials, sleep mechanisms, autonomic disorders, epilepsy, neuromuscular diseases, and movement disorders

- Anatomic Substrates of EEG, EMG, evoked potentials, sleep and autonomic activity

- Indications : Know the indications for and the interpretation of the various CNP tests in the context of the clinical problem.

EEG:

- Recognize normal EEG patterns of infants, children, and adults

- Recognize abnormal EEG patterns and their clinical significance, including

- epileptiform patterns, coma patterns, periodic patterns, and the EEG patterns seen with various focal and diffuse neurologic and systemic disorders.

- Know the EEG criteria for recording in suspected brain death EMG:

- Know the normal parameters of nerve conduction studies and needle exam of infants, children, and adults

- Know the abnormal patterns of nerve conduction studies and needle exam and the clinical correlates with various diseases that affect the neuromuscular and peripheral nervous system

Evoked Potential Studies:

- Know the principles and recording of evoked potential studies, including pattern

- Reversal visual evoked responses, brainstem auditory evoked responses and somatosensory evoked potential studies.

- Know the generators and names of waveforms and normal values of evoked potential studies.

- Know the clinical significance of normal and abnormal findings of evoked potential studies.

Sleep recordings:

- Be familiar with the basic principles of tests, including polysomnography, and multiple sleep latency tests, and evaluation of various sleep disorders.

Autonomic Function Tests:

- Be familiar with the various tests used to evaluate disorders of the autonomic nervous system, including the quantitative sweat axonal reflex test (QSART), the thermoregulatory sweat test, heart rate, and blood pressure changes.

Special Recordings:

- Be familiar with the indications for doing prolonged EEG monitoring studies, recording EEG, EMG, evoked potential studies in the ICU, intraoperative intracranial and spinal cord recording, and recording various movement disorders.

Instrumentation:

- Be familiar with basic electronics, analog/digital recording, electrodes for recording EEG, EMG, and EPs, stimulators and stimulus parameters, amplifiers, and filters.

Principles and Techniques of Recording:

- Know the techniques for localization, polarity, stimulus parameters, and montages for the various CNP Studies.

Laboratory and Electrical Safety:

- Know the principles and guidelines for electrical safety of doing recordings in the lab, ICU, and operating room.

Other Inter-related Subspecialties:

Neuroendocrinology

- Understand the principles of the NS in endocrine function and neurological features of endocrine disorder and need for referral
- Clinical features and investigations in endocrine disorders: emergency management of disorders: relationships with neurological disorders: steroid therapy

Neurogenetics

- Understand the principles of genetics as applied to neurological disorder: ability to interpret a genetics report

- Basic genetic principles and common diagnostic methods: roles of a detailed family history, of DNA based diagnostic tests, of liaison with clinical Genetics: genetic contribution to multifactorial neurological disease (e.g. stroke, multiple sclerosis, subarachnoid haemorrhage, epilepsy): clinical features of common genetic conditions (hereditary ataxias, Huntington's disease, hereditary neuropathies, muscle diseases, and neurocutaneous syndromes): bioinformatic databases of human disease]

Neurointensive care

- Ability to evaluate and manage (with others) people in ICU
- Clinical features, causes, investigation and management of coma (including epilepsy and raised intracranial pressure), failure to regain consciousness and paralysis: diagnosis of and ability to define the vegetative state: ICU neurological complications of major surgery, sepsis, drugs & medical disorders
- Management of status epilepticus: the principles of cardiovascular and respiratory support: indications for and methods of artificial nutrition: clinical, legal and ethical issues in brain death, coma and vegetative state: communication issues with patients, relatives & staff in ICU

Neuro-otology

- Ability to evaluate the deaf and / or dizzy person and interpret reports
- Applied anatomy and physiology of hearing and balance: history and examination techniques: conditions affecting the vestibulocochlear system: appropriate referral pathways

Neuropathology

- Ability to appropriately request pathological investigations and interpret pathology reports
- The pathological and biochemical basis of neurological disorders; anatomy of brain sections, brain preparation, histological, histochemical, immunocytochemical and E.M. techniques; biochemical, immunological & microbiological techniques; and understand and interpret reports issued: role of and consent process for necropsy examination]

Neuropsychiatry

- Ability to evaluate and interpret psychiatric symptoms in and as presentations of neurological disorders, psychiatric consequences of neurological disease and neurological features in people with psychiatric disorders
- Understanding of common psychiatric disorders (including learning disability), neurological features which may have psychiatric causes (including medically unexplained symptoms): the mental health act and when it can be used: ability to evaluate and manage acute organic brain syndromes: ability to liaise effectively and appropriately with Psychiatry services

Neuropsychology

- Ability to utilize basic clinical tests of cognitive function, to understand the need to refer to and the role of the Clinical Neuropsychologist and to interpret reports.

- Understanding of neuroanatomical and neurophysiological basis of memory, attention, language and perception: understand the value and limitations of Neuropsychological interventions such as Cognitive Behavioural Therapy: understand mini-mental state examination, , basic neuropsychological tests employed by Clinical Psychologists, e.g. NART, WAIS]

Neuroradiology

- Ability to request and evaluate neuroradiological investigations and reports and liaise effectively with the neuroradiologist: understand the role, risks & limitations of common techniques
- Request, interpret and utilise neuro-radiological investigations appropriately: explain the nature, risks and benefits of neuroradiological investigations (CT scan cranial / angiography; MR scan cranial/spinal/ angiography; catheter angiography diagnostic/interventional; myelography; ultrasound carotid/ trans-cranial/cardiac; other special investigations e.g. PET, SPECT) to patients]

Neurorehabilitation

- Ability to evaluate the requirement for rehabilitation in people with neurological disorders in the context of a multidisciplinary team and make appropriate referrals
- Understand the difference between pathology, impairment, activity & participation: understanding the potential and limitations of neuro- rehabilitation; ability to perform and utilize a functional assessment; contribute to and, if appropriate, lead an MDT meeting being aware of the different roles, skills, approach and agenda of rehabilitation teams:

understand the social perspective, relevant social work legislation and availability of care in the community]

Neurosurgery

- Ability to evaluate the requirement for neurosurgical interventions in people with neurological disorders and to liaise effectively with the neurosurgeon
- Understand the role of neurosurgery in the management of head injury, raised intracranial pressure, intracranial haemorrhage and ischaemic stroke, aneurysm, vascular malformation and tumours, spinal cord and root disorder and peripheral nerve lesions; understand the purpose, limitations, process and complications of biopsy procedures (brain, muscle, nerve); understanding of the principles of general and specific risks and complications of neurosurgical interventions

Uro-neurology

- Ability to evaluate, manage and or refer people with disordered micturition and sexual function due to neurological disorder
- Understand normal control of micturition and sexual function: differential diagnosis of causes of disordered micturition and erectile dysfunction: understand hypo- and hyper-sexuality: understand treatment strategies for disorders of micturition and sexual function: ability to refer appropriately to Urology, Genitourinary Medicine or Uroneurologist

Complete Neurological Examination

1. Neurologic history taking.
2. Signs and symptoms, syndromes, topical and etiological diagnosis. The principles of correlation of neurologic signs with neuroanatomic localization of the lesion.
3. Coscious level assessment, Glasgow coma scale. Assessment of orientation.
4. Assessment of the mental status: cognitive function: assessment of aphasia, apraxia, dyslexia, dysgraphia, dyscalculia, agnosia.
5. Assessment of new learning ability, memory, concentration, reasoning and problem solving, emotional state.

Physical examination technique

6. Cranial nerve examination, signs and symptoms of cranial nerve disorders, syndromes.
7. Examination of the head and the neck, upper limbs, trunk, lower limbs, posture, gait.
8. Examination of motor functions: inspection: posture, habitus, involuntary movements, appearance (atrophy, fasciculations), assessment of passive stretch - muscle tone (rigidity, spasticity, clonus), active and passive movements, assessmant of muscle strength.
9. Examination of reflexes, tendon reflexes, cutaneous superficial reflexes, pathological reflexes.
10. Types of paresis, characteristic features in upper motor neuron lesion, lower motor

neuron lesion, mixed lesion, pseudoflaccid paresis.

11. The sensory examination: assessment of sense (of all sensory modalities

- pain, temperature, light touch, extinction phenomenon, vibration, position sense, discriminative sensations, stereognosis).

12. Examination of meningeal irritation, signs and symptoms. 13.Detailed cerebellar examination. Vestibular examination.

14. Examination of the vertebral column, signs and symptoms of radicular disorders.

15. Record of a complete neurological assessment.

16. Making a diagnosis, a plan of auxiliary examinations, treatment, rehabilitation.

1. Neuroradiology Rotation

Each neurology resident will be assigned two weeks of neuroradiology during their first year of neurology training. It is crucial for a neurology resident to master this area early in his/her training. The resident will perform preliminary interpretations of imaging studies and review the findings with the neuroradiologist. The resident will become proficient in the interpretation of the different neuroimaging tests (CT, MRI, MRA, angiography, myelography).

2. EMG rotation

Each resident will be assigned to the EMG for a month during their second year of neurology training. Residents may also spend additional time in the EMG lab during their elective months. During the rotation, each resident will be provided with a series of cases with electrophysiologic data. The resident will be expected to interpret each case by the end of the rotation. These cases will be discussed in detail with the neuromuscular faculty.

3. EEG rotation

Each neurology resident will rotate in the EEG lab for one month during their second year of neurology training. Additional training may be taken during elective months. During this rotation, the primary objective for each resident is to learn the basics of electroencephalography (EEG) and evoked potentials (EP). To accomplish this, residents must concentrate in several areas. First, residents should observe the process of applying electrodes to patients and then the recording phase itself of both EEG and EP studies. Secondly, residents must review and interpret individual EEGs and EPs on their own and have a preliminary report to present to the attending physician that is reviewing studies that day. The resident should be available each day for formal review of EEG and EP studies by the attending. At this time, the resident must be prepared to present their interpretation of that day's studies. Formal teaching will be done at this time. Finally, each resident is required to enhance their "hands on" experience with adequate reading of related topics. At the end of the rotation, the resident should feel relatively comfortable performing a rough interpretation of EEG and EP studies. The neurology resident on the EEG rotation will also cover the Epilepsy Monitoring Unit (EMU).

4. Neurorehabilitation Rotation

During the neurological rehabilitation rotation, residents will learn major principles of neurological rehabilitation, with emphasis on cognitive assessment and stroke rehabilitation. Consults from the medical rehabilitation service on patients with traumatic brain injury will be an opportunity for residents to learn general treatment recommendations for optimal recovery in this population. Residents are expected to

manage neurological rehabilitation patients relatively independently with respect to patient assessment, general medical care of patients, and medication management.

5. Psychiatry Rotation

Residents will spend a month on the psychiatry consultation service. During this rotation, the neurology resident will develop skills in the assessment of psychiatric problems in a medical setting. The resident will gain an understanding of the interaction of medical and neurological conditions with psychiatric disorders.

6. Outpatient Clinic Rotation

This one-month rotation is designed to increase exposure to various subspecialties of neurology. The resident will be assigned a schedule as to which clinic he/she must attend at a given time. The clinics that the resident will be exposed to are the following:

- Epilepsy Clinic
- Neuromuscular Clinic
- Neuro-ophthalmology Clinic
- Movement disorder clinic
- Multiple sclerosis clinic
- Headache clinic
- Neuropsychology
- Pain management clinic
- Sleep disorders clinic

7. Epilepsy Clinic

A resident may be assigned to Epilepsy clinic during the outpatient rotation. This will take place under the supervision of one of the epilepsy faculty. Residents will be required to perform the initial evaluation of patients referred to the epilepsy clinic. This includes a complete history and neurologic/physical examination. Following this, the resident will be asked to formulate a differential diagnosis and propose a treatment plan for the patient. At the end of the rotation, residents should be familiar with different seizure and epilepsy types and their appropriate treatment.

8. Pain management clinic

The resident will be exposed to a broad range of pain management problems during this rotation. They will be responsible for inpatient and outpatient consultations, developing a treatment plan, and implementation of the plan. During the rotation, the resident will work closely with the attending pain management specialist, pain medicine fellows, and nurse practitioner.

9. Lumbar Puncture Clinic

Each resident will be assigned to LP clinic during the year. All patients must sign informed consent. The goal is to provide each neurology resident with ample opportunity to become proficient in performing a lumbar puncture.

PRINCIPLES OF NEUROLOGCAL EXAMINATION AND PROCEDURES

Management of adults and children as in-patients, including the medically at-risk patient

Objectives	Learning Outcomes	Teaching & Learning Methods	Assessments
To provide in depth knowledge and skill in: • Ability to explain to a patient the hospital process. • Describe differential diagnosis when appropriate, and treatment options. • Know when to refer to or confer with other specialists. • Ability to undertake therapy in a safe manner. • Ability to recognize and deal with complications that may arise. • Describe the spectrum of general illness behavior and relate this to diseases relevant to oral & maxillofacial surgery practice and inpatient	The trainee should be able to: • Take record and interpret an accurate history from patients of any age and communicate effectively. • Know where to refer. Seek advice if unsure. Recognize when input from another specialty is required for individual patients. • Work effectively with other health care professionals. • Describe the nature, benefits and risks of planned procedure. • Assess the likelihood of a significant underlying diagnosis and differentiate patients with urgent and non-	• Workplace (clinical) experience • Clinical cases for observational and personal treatment • Attend trainee seminars within department and wards • Attendance at suitable courses • Attendance at suitable combined clinic-pathological meetings • Self-directed & Independent study	• Workplace based assessments (CBD, DOPS, MSF) • Written Examination/ VIVA

management. • Know and interpret the appropriate investigations needed for management of patients with complex medical histories and/or how to obtain relevant advice. • know the process for patient discharge, appropriate prescribing and arrangements for follow-up if required.	urgent care needs. • Respect patient confidentiality. Maintain cultural awareness and identity. Value patient comprehension and views. • Demonstrate willingness and ability to teach students and healthcare colleagues sound history skills where appropriate. • Show respect for others' opinions. Be conscientious and work cooperatively. Respect colleagues, including nonmedical professionals and recognize good advice. • An appreciation of when to discuss patient management with colleagues from other hospital clinical specialties.		
	Learning Outcomes	**Teaching & Learning Methods**	**Assessments**
To provide in depth knowledge and skill in: • Lumbar puncture	The trainee should be able to: • Demonstrate an understanding of various aspects of lumbar	• Workplace (clinical) experience • Clinical cases for	• Workplace based assessments

• Complication of lumbar puncture. • Ability to safely perform a lumbar puncture	puncture • Apply knowledge to diagnose & prevent complication • Devise a management plan tailored to patient's needs • Assess the risks iinvolved • use instruments safely and appropriately. • Carry out technique under local anesthesia, sedation or general anesthesia. • Carry out steps of procedure	observational and personal treatment • Extra mural training • Attend trainee seminars within department • Attendance at suitable courses • Attendance at suitable meetings • Independent study	(CBD, DOPS, Mini-CEX, MSF) • Written Examination/ VIVA • OSCE

	safely and correctly. • Resist pressure from patient or carer to provide inappropriate treatment • Be willing to offer care. Behave appropriately when dealing with a difficult patient.		

BOTULINUM TOXIN ADMISTRATION

Botulinum toxin administration techniques

Objectives	Learning Outcomes	Teaching & Learning Methods	Assessments
To provide in depth knowledge and skill in: • Assessment of dystonia and its causes. • Know differential diagnosis and treatment options. • Know when to refer or confer with other specialists. • Ability to undertake therapy in a safe manner. • Ability to recognize and deal with complications that may arise.	The trainee should be able to: • Formulate treatment plan including aftercare. • Carry out appropriate procedure with proper technique safely. • Institute aftercare and review. • Demonstrate ability to discriminate between those who need procedure and those who don't, and communicate this.	• Workplace (clinical) experience • Clinical cases for observational and personal treatment • Extra mural training • Attend trainee seminars within department • Attendance at suitable courses • Attendance at suitable meetings • Role Modelling • Independent study	• Workplace based assessments (CBD, DOPS, Mini-CEX, MSF) • Written Examination/ VIVA • Portfolio • OSCE

CEREBROVASCULAR DISORDERS

Management of cerebrovascular disorders

Objectives	Learning Outcomes	Teaching & Learning Methods	Assessments
To provide in depth knowledge and skill in: • Ability to identify a differential diagnosis for patient with cerebrovascular disorder based upon history and relevant investigations and knows investigations & treatment options. • Know when to refer to or confer with other specialists. • Ability to undertake therapy in a safe manner and to recognize and deal with complications that may arise. • Do counselling of patient/ attendant	The trainee should be able to: • Take a comprehensive history and examine the motor and sensory sustem. • Formulate and instigate a treatment plan. • Communicate effectively and empathetically with patients to identify potential etiological factors and signs and symptoms of disease. • Show a high degree of skill in the choice and execution of appropriate techniques for treatment in conjunction with other specialists professionals managing the patient.	• Systematic simulation laboratory exercises • Workplace (clinical) experience • Clinical cases for observational and personal treatment • Attend trainee seminars within department • Attendance at suitable courses • Attendance at suitable meetings • Independent study	• Workplace based assessments (CBD, DOPS, Mini-CEX, MSF) • OSCE

Allied specialties (ROTATION SCHEDULE)

4 years are to be spent in Neurology in which one year will be in rotations and three years in Neurology ward. One year of rotation will be either in 3rd or 4th year as per decision of the chairman of the department keeping in view the level of training of resident/strength available in department.

The schedule of rotation will be as follows

- Neurosurgery ……..2 months
- Electrophysiology……3 months
- Psychiatry……2 months
- ICU…….2 months
- Eye……1 month
- Radiology……1 month
- Rehabilitation……1 month

The order of rotations can be decided by the chairman as per requirement of department.

Research

The resident would be required to undertake a research project and to present the result for examination in the form of a thesis. They would be encouraged to present and publish the result of the project in refereed journals.

The guideline for synopsis and thesis writing is available on University website at

http://www.szabmu.edu.pk/content/downloads/guidelines-for-synopsis-writing.pdf

http://www.szabmu.edu.pk/content/downloads/guidelines-for-thesis-writing.pdf

ASSESSMENT

ASSESSMENT

Assessment of trainees will cover the cognitive, psychomotor and affective domains. It will take two forms

- Formative Assessment
- Summative Assessment

Formative Assessment

It is the continuous assessment of progress and competence. It will be conducted through workplace based assessment throughout the training. Assessment will be undertaken by a range of assessors and will cover a range of procedures appropriate to the stage of training. Formative assessment will include

- Directly observed practical skills (DOPS)
- Case based discussion (CbD)
- Mini clinical examination exercises (Mini-CEX)
- Multiple source feedback (MSF)

Summative Assessment

Summative assessment will be held twice

- Mid Term Assessment (MTA) Examination (At the end of 2nd year)
- Final/Exit Examination (At the end of Final Year)

The level of performance required for passing the exam will depend on the knowledge and skills necessary for acceptable performance and will not be adjusted to regulate the number or proportion of persons passing the examination. The pass point will be determined by careful analysis and judgment of acceptable performance.

Record of Clinical Cases

The trainees will be required to keep a record of the allocated clinical work in a log book. It will be the responsibility of trainee to keep the log book up to date with the signature of the faculty certifying the work.

TABLE OF SPECIFICATION

TABLE OF SPECIFICATION

Table of specification for Mid Term Assessment (MTA) and Final (Exist) Examination is here as under

TOS FOR MID TERM ASSESSMENT (MTA)
MD Neurology (OMFS)

There will be two one best type multiple choice theory papers

- **Theory Paper 1 (MCQs)** **100 Marks**
- **Theory Paper 2 (MCQs)** **100 Marks**

TOS FOR MTA THEORY EXAMINATION

TOS ID	Title	Knowledge			Skill			Attitude			%	MCQs
		C1	C 2	C 3	P 1	P 2	P 3	A 1	A 2	A3		
MED-1	Basic principles of Medicine			20			30			10	**50**	**50**
MED-2	Gen Medicine			02			06			02	**10**	**10**
MED-3	Cardiology			03			10			02	**15**	**12**
MED-4	Gastroenterology			01			03			01	**5**	**5**
MED-5	Nephrology			01			03			01	**5**	**5**
MED-6	Infectious Diseases			02			02			01	**5**	**8**
MED-7	Pulmonology			01			03			01	**5**	**5**
MED-8	Endocrinology			01			03			01	**5**	**5**
TOTAL											**100**	**100**

Note: The details of these modules titles are given in curriculum of medicine

TOS for Final/Exit Examination MDS (OMFS)

Final Examination (After completion of 4 years)

The student shall submit completion of training certificate, Log Book, mandatory workshop attendance, thesis on research topic approved by supervisor, through the Dean to the Controller of Examination. If the thesis not approved by the supervisor, application for extension may be recommended by supervisor through Registrar to the AS&RB. The final examination of subject, thesis evaluation and viva voce examination will be conducted by board of Four (04) examiners. The candidate will be examined in major subject and thesis as under: supervisor will not be paper setter /Examiner of his/her candidate as per PMDC regulation 2001.

Theory Paper		**200 Marks**
Paper I	Speciality Course MCQs	100 Marks
Paper II	Speciality Course MCQs	100 Marks
Viva Voce & Practical		**300 Marks**
Practical and OSCE/OSPE		**300 Marks**
a.	Long Case (One)	(100 Marks)
b.	Short Case (Four)	(100 Marks)
c.	OSCE	(100 Marks)
Thesis Defence		**100 Marks**
TOTAL		**600 Marks**

TOS for Theory Paper A & B Final Exit Examination

TOS ID	Titles	Weightage				MCQs
		Knowledge	Skill	Attitude	Total %	
NEU-1	Cerebrovascular diseases	12	05	03	**20**	**40**
NEU-2	CNS infections	05	04	01	**10**	**20**
NEU-3	Demyelinating diseases	05	03	02	**10**	**20**
NEU-4	Pediatric neurology	07	02	01	**10**	**20**
NEU-5	Degenerative diseases of CNS	05	03	02	**10**	**20**
NEU-6	Neuromuscular disorders	05	03	02	**10**	**20**
NEU-7	Systemic and metabolic disorders affecting CNS	05	02	03	**10**	**20**
NEU-8	Neoplastic disorders	06	02	02	**04**	**8**
NEU-9	Movement disorders	07	02	01	**06**	**12**
NEU-10	Miscellaneous and Epilepsy	05	02	03	**10**	**20**
TOTAL					**100**	**100**

TOS FOR PRACTICAL EXAMINATION

14 OSCE-Stations (140 Marks)

(5 minutes each station)

TOS ID	Title	Stations
NEU-01	Neurological diagnosis and management	**6**
NEU-02	Electrophysiology	**1**
NEU-03	Nerve conduction/Electromyography	**1**
NEU-04	Neuroimaging CT	**2**
OMFS-05	Neuroimaging MRI	
OMFS-06	Counselling	1
OMFS-07	Movement Disorders	1
OMFS-08	Miscellaneous	2
Total		**14**

LEARNING RESOURCES

LEARNING RESOURCES

List of Essential Readings

Books:

INTERNAL MEDICINE:

1. Clinical Medicine: Textbook for Medical Students & Doctors. Kumar & Clark (editors). 6th edition (2006). Elsevier Saunders, Edinburgh.
2. Harrison's Principles of Internal Medicine by Eugene Braunwald. 16th Ed. McGraw-Hill
3. Davidson's Principles and Practice of Medicine by Nicholas A. Boon 20th edition. Churchill Livingstone
4. Hutchison's Clinical Methods in Medicine by Michael Swash. 21st edition. A. Saunders Ltd.

NEUROLOGY:

1. Principles of Neurology - Adams and Victor.
2. Merritt's Textbook of Neurology - Lewis Roland.
3. Memorix Neurology Peter Berlit. Chapman & Hall Medical.
4. Localization in Clnical Neurology - Brazis, Masdeu, Biller.
5. Neurology in Clinical Practice - Bradley, Daroff, Fenichel, Masdeu.

Journals:

Issues of last two years of the following journals

- Journal of Neurology, Neurosurgery and Psychiatry
- Journal of American Academy of neurology

- Movement Disorders in clinical practice
- New England journal of Medicine

PROGRAM EVALUATION

PROGRAM EVALUATION

The program director will continue to ensure that the program is fit for purpose in that it provides the trainee with the appropriate knowledge, skills, attitudes and competencies required to meet the requirements of a specialist.

Program evaluation will be carried out after every two years according to the CIPP model of evaluation. Any suggested updates will only be made following appropriate consultation with stakeholders, including trainees and lay members.

Feedback forms are attached as "Annexure A"

Note: This is an evolving document and new changes will be done as per requirements/ needs of the newly developed MD Neurology program to make it at par with HEC/ international requirements

ANNEXURE A

Supervisor Evaluation Form

Date:_____ Supervisor's Name: _____

Your Name:_____ Signature: _____

Evaluations of supervisors by Trainee's are an important process for providing supervisors with an assessment of the quality of their work. Annual supervisor assessments can be used to compliment a supervisor for doing a good job. Annual assessments can also identify areas for improvement. Evaluations can strengthen communications between supervisors and trainee's.

Trainees have three options for evaluating supervisors:

1) Completing the Evaluation of Supervisor form.
2) Writing a signed memo evaluating the supervisor.
3) Meeting with the supervisor's department head.

Evaluations received by the deadline (January 15) will be incorporated into the annual review of the supervisor. Forms and/or signed memos should be sent to the Human Resources department.

* * *

(E=Excellent, G=Good, S=Satisfactory, N=Needs Work, U=Unsatisfactory, Ø=No Opinion)

Performs Supervisory Functions

Provides on-going positive and negative feedback	**E**	**G**	**S**	**N**	**U**	**Ø**
Makes expectations known	**E**	**G**	**S**	**N**	**U**	**Ø**
Is tactful and considerate	**E**	**G**	**S**	**N**	**U**	**Ø**
Promotes teamwork and good working relationships	**E**	**G**	**S**	**N**	**U**	**Ø**
Recognizes and addresses concerns in a timely manner	**E**	**G**	**S**	**N**	**U**	**Ø**
Delegates authority appropriately	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides training of new employees	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides direction of work	**E**	**G**	**S**	**N**	**U**	**Ø**
Communicates openly and honestly with peers, staff and administration	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

_____

_____

_____

_____

_____

_____

Develops Innovative Procedures

Is receptive to new ideas	**E**	**G**	**S**	**N**	**U**	**Ø**
Is receptive to questions	**E**	**G**	**S**	**N**	**U**	**Ø**
Encourages initiative and innovation	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

_____

_____

_____

_____

_____

_____

III. Maintain Positive Works Environment

Recognizes contributions	**E**	**G**	**S**	**N**	**U**	**Ø**
Motivates workers	**E**	**G**	**S**	**N**	**U**	**Ø**
Provides relaxed yet efficient work atmosphere	**E**	**G**	**S**	**N**	**U**	**Ø**
Encourages staff development	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

Knows the Operations of the Department

Understands employee workload	**E**	**G**	**S**	**N**	**U**	**Ø**
Is alert to potential problems	**E**	**G**	**S**	**N**	**U**	**Ø**
Keeps staff informed about department and university developments	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

Work Habits

Acknowledges own limitations and mistakes	**E**	**G**	**S**	**N**	**U**	**Ø**
Maintains a positive work attitude	**E**	**G**	**S**	**N**	**U**	**Ø**
Uses time efficiently and effectively	**E**	**G**	**S**	**N**	**U**	**Ø**
Demonstrates a good work ethic	**E**	**G**	**S**	**N**	**U**	**Ø**

Comments: _____

_____

_____

_____

_____

_____

_____

Please use the bottom and back of this sheet as space for expanding on any comments above or to make any

additional comments.

Program Evaluation Form

Please use the following scale to indicate your response to the statements below:

SA = strongly agree

A = agree

N = neither agree/disagree

D = disagree

SD = strongly disagree

The information was presented effectively	**SA**	**A**	**N**	**D**	**SD**
The information presented was practical	**SA**	**A**	**N**	**D**	**SD**
The program provided a good working knowledge of the subject matter presented	**SA**	**A**	**N**	**D**	**SD**
The program has allowed me to acquire practical skills and knowledge to manage my business more effectively and efficiently	**SA**	**A**	**N**	**D**	**SD**
The program attended was sufficient for my purpose	**SA**	**A**	**N**	**D**	**SD**