DIPLOMA IN NEURO ELECTRO PHYSIOLOGY

PRELIMINARY COURSE

E.E.G. COURSE CARRICULUM:

1. NEURO-ANATOMY: Lobes of the brain and neurons.

2. NEURO-PHYSIOLOGY :

   i) Physiology of excitable neurons
   ii) Membrane potentials and action potentials
   iii) Synaptic activity
   iv) Neurotransmitters
   v) Generation of EEG rhythm and basic EEG rhythm

3. NEURO-PATHOLOGY:

   i) Pathology of nerve cell injury
   ii) Generation of epileptiform activity

4. CLINICAL:

   A) Seizure disorder and its differential diagnosis
   B) i) Normal EEG pattern in children and adult, awake and sleep.
   ii) Neonantal EEG
   iii) Normal variants
   iv) Artifacts : Eye movements, muscle pulse
   v) Activation methods: Hyperventilation, photic stimulation, sleep deprivation, others
   vi) Abnormal EEG records, definition-spike, sharp, slow waves, other abnormalities
   vii) Abnormal EEG in neurological diseases
   viii) Brain death

5. TECHNICAL ASPECTS:

   i) Different parts of EEG machine and its functions, i.e. montage, electrodes, filter, calibration, sphenoidal electrode, depth electrodes.
   ii) Electroencephalographic monitoring (in patients and ambulatory), Video Electroencephalography, Intraoperative records, Quantitative electroencephalography, Brain mapping and others (in brief).
   iii) Electroencephalographer's reporting
   iv) Record keeping.

FINAL COURSE

EEMG, NCV AND EVOKED POTENTIALS COURSE CARRICULUM:

1. NEURO-ANATOMY:

   Muscle : Origin, insertion, nerve supply, structure
   Nerve : Course-cranial and peripheral, structure

2. NEURO-PHYSIOLOGY :

   Muscle :
   i) Functions of muscles
   ii) Muscle contractions
   iii) Electrical properties of muscles

   Nurve:
   i) Functions of nerve
   ii) Electrical properties of nerve.Near filed potential and Far field potential
   iii) Nerve conduction
   iv) Neuromuscular junction and neurotransmitters

3. NEURO-PATHOLOGY:

   Muscle : Pathological changes in muscles
   i) Primary muscle disease
   ii) Injury
   iii) Metabolic
   iv) Inflammatory
   v) Others
   vi) Neurogenic muscle involvement
   vii) Neuromuscular junction abnormalities

   Nurve:
   i) Demyelination
   ii) Axonopathy

4. CLINICAL:

   1) Nerve: a) Disease affecting cranial and peripherals
      i) Bells play
      ii) Peripheral neuropathy
      iii) Entrapment neuropathy

      b) Basic principles of nerve conduction study (NCS)
      i) Motor NCS
      ii) Sensory NCS
      iii) F-ware
      iv) H-reflex
      v) Blink reflex and others
      vi) Repetitive nerve stimulation
      vii) Abnormalities in disease
      viii) Central motor conduction

2) Muscle:
a) Disease of muscle and neuromuscular junctions
b) Normal EMG recording-Resting/Insertional activity/Volitional recruitment pattern, Interference pattern.
c) Abnormal EMG –
    i) Myopathies
    ii) Neurogenic muscle involvement
    iii) Involuntary muscle contractions
    iv) Neuromuscular transmission disorder
d) Needle EMG – Conventional, Macro EMG, Surface EMG, Single fibre EMG

3) Evoked potential studies:

i) Visual evoked potential
ii) Brainstem auditory evoked potential
iii) Somatosensory evoked potential

4) Instruments:

i) Basic knowledge about the machines
ii) Electrodes
iii) Electrode impedance
iv) Identification of wave pattern
v) Artifacts
vi) Normal laboratory values
vii) Electromyography reporting
viii) Record keeping

5. Polysomnographic studies – Normal sleep and sleep disorder (in brief)