OTA 105 Intro to Neuroscience

COURSE LEARNING OUTCOMES (CLOs)
1. Define terms relating to nerve physiology, structures, and basic functions of the central and peripheral nervous systems.
2. Identify and locate basic structures of the central nervous system and discuss functions and mechanisms of injury or disease.
3. Identify and locate basic structures of the peripheral nervous system and discuss functions and mechanisms of injury or disease.
4. Describe functions of the autonomic nervous system.
5. Describe the vascular supply, cerebrospinal fluid spaces, and meninges.
6. Discuss diseases that affect the nervous systems.
7. Discuss neurophysiologic principles as a basis for occupational therapy treatment.

Course Outline
I. Overview of Neuroscience and Functions of the Brain
   A. Diagnostic Tools
   B. Overall Structure, Processing, and Function
II. Neuroembryology
III. Nerve Physiology
    A. Neurons
       1. Anatomy
       2. Electrochemistry of Synapses
    B. Neuroglia
IV. Cranial Nerves
    A. Structures and Functions of Cranial Nerves
       1. Classification of 12 Cranial Nerves
       2. Interrelationship of Ocular, Vestibular, and Cochlear Systems
    B. Etiology and Clinical Manifestations of Disease or Injury
V. Peripheral Nervous System (PNS)
    A. Overview
    B. Structures and Functions of the PNS
       1. Spinal Nerves
       2. Afferent Pathways (Somatosensory System)
       3. Efferent Pathways (Motor Units)
    C. Etiology and Clinical Manifestations of Disease or Injury
VI. Reflexes and Gamma Motor Loop
    A. Muscle Spindles
    B. Golgi Tendon Organs
    C. Reflexes
VII. Sensory Systems
    A. Overview
    B. Diagram of Sensory Inputs and Processing
    C. Structures and Function
    D. Etiology and Clinical Manifestations of Disease or Injury
VIII. Voluntary Motor Control
    A. Overview
    B. Diagram of Motor Inputs and Processing
    C. Structures and Function
    D. Etiology and Clinical Manifestations of Disease or Injury
IX. Cortex
   A. Overview
   B. Structures and Functions of the Central Nervous System
      1. Hemispheric Specialization
   C. Etiology and Clinical Manifestations of Disease or Injury

X. Autonomic Nervous System
   A. Overview
   B. Structures and Functions
      1. Sympathetic
      2. Parasympathetic
   C. Etiology and Clinical Manifestations of Disease or Injury

XI. Vascular System and Cerebrospinal Fluid
   A. Overview
   B. Structures and Function
      1. Arterial Supply of Central Nervous System
      2. Venous Flow
      3. Blood-Brain Hypothesis
      4. Ventricles
      5. Meninges

XII. Neurophysiologic Treatment Principles