I. What is Neuroscience?

A. A science concerned with development, chemistry, structure, function, and pathology of the nervous system.

B. As part of neuroscience, the development of transcranial magnetic stimulation enabled researchers to stimulate brain activity without opening the skull.

C. Medical Imaging Techniques
   1. Positron Emission Tomography
   2. Computed Tomography
   3. Blood Oxygen Level Dependent Changes MRI
   4. Diffusion Tensor Imaging
   5. Functional MRI

II. Analysis of the Nervous System

A. Molecular Neuroscience
   1. Investigates the chemistry and physics involved in neural function
   2. Chemical and electrical changes in the nervous system
      a. Example: moving, sensation, speaking, understanding
   3. The chemical transfers of information between nerve cells are molecular-level neuroscience

B. Cellular neuroscience
   1. Distinctions between different types of cells and the functions of each cell type
   2. How an individual neuron processes information
   3. How information is transferred among neurons

C. Systems neuroscience
   1. Connections or circuitry of the nervous system
      a. Example: proprioceptive system
   2. Positions and movements of systems

D. Behavioral neuroscience
   1. Interactions among systems that influence behavior

E. Cognitive neuroscience
   1. Thinking, learning and memory
   2. Planning, using language, and identifying the differences between memory for remembering and performing

F. Cellular Level
   1. Neurons – functional unit consisting of a nerve cell body, dendrites, and the axon