Central Nervous System - Brain

- Identify the anatomical location of each major brain area.

- Describe the functions of the major brain areas including specialized subregions.

### Major brain areas

- **Cerebrum**
  - cortex
  - basal ganglia
  - limbic system

- **Cerebellum**
  - motor coordination
  - balance

- **Thalamus**
  - sensory relay station

- **Brain stem**
  - midbrain
  - pons
  - medulla

- **Reticular formation**
  - arousal/sleep/wake

---

**Figure 48.24 Structure and functional areas of the cerebrum**
Figure 48.25 Primary motor and somatosensory areas of the human cerebral cortex

Figure 9-13: The limbic system

Cerebrum - basal nuclei and limbic system

- Basal nuclei – control of movement
- Limbic System
  - Cingulate gyrus – role in emotion
  - Hippocampus – learning & memory
  - Amygdala – emotion & memory
Cerebral Cortex:
Perception: hearing, vision, olfaction, muscles & viscera
Reasoning, information integration
Directing voluntary behavior

Diencephalon - thalamus & hypothalamus

- Thalamus – relay & sensory integration
- Hypothalamus
  - Homeostatic control centers
  - Motivated behavior control
  - Hunger, stress
  - Thirst: body osmolarity
  - Autonomic NS control
  - Emotional input
  - Circadian rhythms
  - Tropic for endocrine
Map this pathway:

“You touch the desk and then move your hand away as soon as you feel the desk.”