


Module 1:Human Nervous System

Lecture 7: Lobes

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## Module 1: Human Nervous System

### Lecture 7: Lobes

#### Lobes

The cerebrum consists of the cortex, grey matter, and the white matter. It is divided into two hemispheres— the left and the right, which are separated by a long crevice called longitudinal fissure but connected by a band of nerve fibers called corpus callosum. It is further divided into four lobes— frontal, temporal, parietal and occipital. The animations given below show the lobes and the table gives the functions mediated by them.

[See video on web](#)

#### Functions

Voluntary movements, Contralateral control, Coordination of motion, Control of autonomic responses, Emotional control, Eating, walking, etc

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#### Functions

Visual learning, Visual and auditory processing, Language processing, Recognition of facial expressions, Complex memories, Decoding vocal intonation, rhythm and music, Intermediate and long term memory

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#### Functions

Reception and interpretation of visual stimuli, Memory for visual stimuli, Colour orientation

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## Functions

Coordination of sensory input and motor output, Integration of visual and auditory signals, 3-d leveling of perceived objects, Speech

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The cerebrum performs vital cognitive functions such as learning, attention, memory, thinking, abstraction, problem solving, etc. If we look at the overall functional aspect of the cerebrum, it can be said that the temporal, parietal, and occipital lobes are input oriented whereas the frontal lobe is output oriented. Further all these lobes are well designed for execution of specific tasks. They engage in tasks at primary, secondary, and tertiary levels. At primary level the sensory or motor signals are received. Assigning meaning to these signals is secondary level function. Finally at the tertiary level the lobes integrate the basic functions with other functions. Let us take one example each for the three lobes and understand it more clearly.

The primary task performed by the parietal lobe is receiving somatosensory inputs. At the secondary level the site and nature is perceived with respect to self and space and finally this is integrated with visual and acoustic information at the tertiary level. Similarly, the primary function of occipital lobe is to sense lines and angles in terms of orientation and colour. At the secondary level shape and size are recognized and colours are interpreted. The integration of this analysis with verbal and spatial information is the tertiary level task. The temporal lobe, for example, while performing auditory task at the primary level temporal lobe perceives the pitch and intensity and discriminates it from the background or noise. The secondary level performance involves recognition and interpretation of the sound. Finally at tertiary level this is integrated with the visual and auditory information. Here memory also plays a vital role. As the frontal lobe is mainly involved with output attention, processing, feedback and corrections are its major role. The central nervous system has the responsibility of accomplishing coordination between each of these systems.

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