Study guide topics for midterm 2 – COGS17 – Neurobiology of Cognition –

I – Psychopharmacology section:

- Draw a diagram that represents a terminal button and postsynaptic neuron. Indicate in this diagram at least eight ways that drugs can affect synaptic transmission and give an example of each.
- Describe the biosynthesis of acetylcholine. List three different means that would act to alter the release of acetylcholine.
- Explain what is meant by a therapeutic index.
- Compare and contrast drug tolerance with drug sensitization.
- Contrast the location and function of autoreceptors with postsynaptic receptors.
- What is the advantage of reuptake over enzymatic degradation in the termination of neurotransmitter postsynaptic effects?
- Compare and contrast the locations and synaptic functions of the two types of acetylcholine receptors. Provide an example of antagonists for each receptor.
- Describe and discuss the synthesis of dopamine and its role in Parkinson’s disease.

II Vision section:

- Explain what is involved in the process of sensory transduction.
- Describe how the physical dimensions of light correspond to the psychological dimensions of light.
- Compare and contrast the visual functions of rods and cones.
- Describe the primary visual pathway.
- Explain how the receptor potential in a photoreceptor by light generates action potentials within the visual system.
- Explain the concept of a receptive field in the visual system.

III Auditory and Vestibular Section:

- Describe the physical and psychological properties of sound.
- Describe the basic anatomy of the middle and inner ear that is relevant to hearing.
- Explain how the brain codes for the spatial location of sound.
- Explain the difference between otolithic organs and semicircular canals.
- Discuss, compare and contrast the hair cells in the inner ear with the vestibular sacs.
- Discuss the vestibular nuclei and the effect that each of its projections has on an individual.