

## Curriculum

Code	Course Title	Credits
NSL 0501	Principles of Neuroscience and Neuroanatomy Laboratory	3
NSL 0502	Sensory and Sensory-Motor development: Implications for assessment and teaching	2
NSL 0511	Principles of Cognitive Neuroscience, Cognitive Neuropsychology & Neuroeducation	2
NSL 0512	Theoretical models of learning	1
NSL 0601	Brain-Based Learning	3
NSL 0602	Neuropsychology of Learning Disorders: A Pragmatic Approach	2
NSL 0611	Design and Administration of Neuroscience-Based Learning Environments	2
NSL 0612	Neurodevelopmental Alterations: Learning and Behavioral Manifestations	2

Elective Course:

The student will choose one of the following courses:

- NSL 0503 Pediatric Neuropsychological Assessment- 1 credit.
- NSL 0603\_New Challenges for Learning: Growing up in the Age of Electronic Media- 1 credit.

## Course Descriptions

### NSL 0501 Principles of Neuroscience and Neuroanatomy Laboratory

Starting with a general exploration of the intrauterine development of the neural tube and neural crest cells, the course explores the anatomical and physiological foundation of the nervous system within a developmental context. It provides a general overview of the neural and chemical basis of behavior. The lectures will mostly address normal neurological development and functioning but will refer of the clinical implications of various endogenous and exogenous abnormalities such as genetic and neurodevelopmental variations and morphological abnormalities. The sensory, motor and arousal systems will be explored. In addition, the neural basis of learning will be examined in detail.

The anatomy laboratory will be integrated with the class lectures for further understanding of the neuroanatomical correlates of learning. By the end of the course the student should be able to identify

the most significant brain structures. Exposure to these laboratory sessions will enhance students' understanding of complex theoretical information such as the neurophysiology of learning.

### **NSL 0502 Sensory and Sensory-Motor development: Implications for assessment and teaching**

The study of the diverse psychological systems that allow the human being to gather information/knowledge from his/her internal and external world is the focus of this course. The psychology of sensation, perception, cognition, psycholinguistic and information processing provides the experimental and theoretical background to the study of the following topics: attention, thinking, problem solving, language and memory.

### **NSL 0503 Pediatric Neuropsychological Assessment**

The course will introduce students to the field of Pediatric Neuropsychology from a theoretical, scientific, and clinical perspective. Students will utilize the information learned to engage in case analysis and to determine the type of diagnostic tool that best serves to the understanding of the child's condition. The NEPSY battery and other neuropsychological instruments will be taught through the course. Testing profile of the most common neuropsychological conditions found in children and adolescents will be presented. Students will perform at least one battery of test and will be able to present their case for feedback from the professor and from peers.

### **NSL 0511 Principles of Cognitive Neuroscience, Cognitive Neuropsychology & Neuroeducation**

This seminar-like course will focus on the integration of two major fields of neurosciences, human neuropsychology, and cognitive neuroscience, with the recently emerging field of neuroeducation. The component of human neuropsychology focuses on the understanding of mental processes in human beings, with an emphasis on the examination of brain trauma results. On the other hand, the cognitive neuroscience component will provide a general overview of how mental functions are linked to neural processes. The area of neuroeducation brings to this course the integrative junction of knowledge coming from cognitive neuropsychology and cognitive neurosciences as they impact the field of education. Through discussions of up-to-date research papers and selecting readings this class will integrate knowledge of three constantly evolving fields.

### **NSL 0512 Theoretical models of learning**

This course will focus on the main tenets of Human learning and cognitive processes. It will provide a brief chronological overview of the development of learning theories until their integration with neurosciences. However, the main target of this course is to introduce students to the differentiation of significant versus mechanic learning within the learning process. Major theories and aspects concerning the learning process and their implications for the instructional process will also be examined.

### **NSL 0601 Brain-Based Learning**

This course will introduce the student to the confluence of knowledge where the area of Neuroscience of Learning was born from. Along the course the student will be able to delve into the basic principles that govern this emerging field of knowledge. Furthermore, learners will be taught how to create brain-based environments in the classroom and will experience how to transfer the knowledge from the theory to the practice in a meaningful manner. Concrete techniques for teaching and learning developed from brain-based learning theories will also be examined.

### **NSL 0602 Neuropsychology of Learning Disorders: A Pragmatic Approach**

This course will focus on introducing the student to specific techniques supported by neuroscientific findings to work with people living with learning disorders. Although a general overview of different disorders will be offered lectures will be centered on the following disorders: Mental Retardation, Reading Disorder, Disorder of Written Expression and Mathematics Disorder. In addition, special attention will be dedicated to how to establish brain-based environments for people with learning disorders.

### **NSL 0603 New Challenges for Learning: Growing up in the Age of Electronic Media**

This course will focus on the roles of popular media in learning and cognitive processes. There is an influence of media in learning and a certain urgency to study the relationship between both. In order to understand this potential relationship, we need to examine the theories, research, designs and models associated with the behavioral roots of the cognitive process. The use and influence of technology and media like the internet, social media, cell phones, eBooks, tablets, etc. represent a new way of active learning and a challenge for our traditional learning approach. However, the main target of this course is to introduce students to the fundamentals of this new active learning and analyze it in terms of a cognitively relevant frame. We will focus on debates and issues raised by various media environments such as these related to young people's growth and learning.

### **NSL 0611 Design and administration of Neuroscience-Based learning environments**

This course seeks to impact the field of pedagogy incorporating up to date research findings that show how to create enriching environments for learning. Special attention will be dedicated to the process of syllabi development and to the inclusion of brain-compatible strategies for the different subjects at school. New evidence-based assessment techniques will be suggested as well. The long-term goal is ultimately impacting school's curriculums, the perception of pedagogy and the delivery of education in our contemporary society.

**NSL 0612 Neurodevelopmental Alterations: Learning and Behavioral Manifestations.**

This course will focus on introducing the student to the etiology, prevalence, and prognosis of developmental disorders from genetic, metabolic, and morphological perspectives. Although a general overview of different disorders will be offered lectures will be centered on the following disorders: Mental Retardation, Attention Deficit Disorder and Autistic Spectrum. In addition, the manifestations of developmental alterations through learning and behavior will be revised. Tools to establish favorable environments for learning for people.