Neuroscience

Chair

- Daniel T. Tranel (Neurology/Psychological and Brain Sciences)

Graduate degree: Ph.D. in neuroscience
Faculty: https://neuroscience.grad.uiowa.edu/people/faculty
Website: https://neuroscience.grad.uiowa.edu

Courses

Neuroscience Courses

**NSCI:4353 Neurophysiology: Cells and Systems** 3-4 s.h.
Physiological properties of nerve cells, nervous systems; axonal conduction, synaptic transmission, sensory transduction, integrative processes, higher functions.
Prerequisites: (BIOL:2753 or BIOL:3253) and (MATH:1460 or MATH:1380 or MATH:1550 or MATH:1850) and ((PHYS:1511 and PHYS:1512) or (PHYS:1611 and PHYS:1612)). Same as BIOL:4353.

**NSCI:5212 Foundations in Behavioral and Cognitive Neuroscience** 4 s.h.
Concepts, methods, and findings in behavioral and cognitive neurosciences. Prerequisites: BIOL:3253. Same as PSY:5212.

**NSCI:5365 Seminar: Neuropsychology and Neuroscience**
Clinical neuropsychology and cognitive neuroscience: cutting-edge research from scientific journals, case presentations in clinical neuropsychology, and current research. Same as NEUR:5365, PSY:5365.

**NSCI:5653 Fundamental Neurobiology I** 3 s.h.
Neurobiology from molecular/cellular to systems levels, including cell biology of the neuron; membrane electrophysiology; synaptic transmission and plasticity, functional neuroanatomy, sensory, motor and autonomic systems; emotion, memory, sleep, language, attention and cognition, neuronal development; focus on systems and developmental neurobiology; first in a two-semester sequence. Same as BIOL:5653, PSY:5203.

**NSCI:5654 Fundamental Neurobiology II** 3 s.h.
Neurobiology from molecular/cellular to systems levels, including cell biology of the neuron; membrane electrophysiology; synaptic transmission and plasticity; functional neuroanatomy, sensory, motor and autonomic systems; emotion, memory, sleep, language, attention and cognition, neuronal development; focus on molecular/cellular neurobiology and neurophysiology; second in a two-semester sequence. Prerequisites: BIOL:5653 or NSCI:5653 or PSY:5203. Same as BIOL:5654, PSY:5205.

**NSCI:6050 Advanced Quantitative Training for Neuroscience** 4 s.h.
Review of statistical inference, type-I errors, statistical power, measurement reliability issues in context of between/within-subjects t-tests, ANOVAs, correlations, and regressions with attention to causality and generalizability; multiple linear regression, model building, model testing, confounding/mediation, interactions; mixed models with nested/crossed, fixed/random factors, and repeated measure designs. Offered spring semesters. Prerequisites: PSY:5050.

**NSCI:6209 Steroid Receptor Signaling** 1 s.h.
Structure-function relationship and genomic and nongenomic actions of the steroid hormone receptor family; basis for actions of novel new ligands on these receptors. Offered spring semesters of even years. Same as MPB:6209, PCOL:6209.

**NSCI:6265 Neuroscience Seminar** 0-1 s.h.

**NSCI:7235 Neurobiology of Disease** 3 s.h.
Broad, thematic understanding of disease mechanisms in neurobiological disorders. Same as NEUR:7235.

**NSCI:7301 Directed Study in Neuroscience** arr.

**NSCI:7305 Neuroscience Research** arr.
Requirements: neuroscience graduate standing.

**NSCI:6050 Advanced Quantitative Training for Neuroscience** 4 s.h.
Review of statistical inference, type-I errors, statistical power, measurement reliability issues in context of between/within-subjects t-tests, ANOVAs, correlations, and regressions with attention to causality and generalizability; multiple linear regression, model building, model testing, confounding/mediation, interactions; mixed models with nested/crossed, fixed/random factors, and repeated measure designs. Offered spring semesters. Prerequisites: PSY:5050.

**NSCI:6209 Steroid Receptor Signaling** 1 s.h.
Structure-function relationship and genomic and nongenomic actions of the steroid hormone receptor family; basis for actions of novel new ligands on these receptors. Offered spring semesters of even years. Same as MPB:6209, PCOL:6209.

**NSCI:6265 Neuroscience Seminar** 0-1 s.h.

**NSCI:7235 Neurobiology of Disease** 3 s.h.
Broad, thematic understanding of disease mechanisms in neurobiological disorders. Same as NEUR:7235.

**NSCI:7301 Directed Study in Neuroscience** arr.

**NSCI:7305 Neuroscience Research** arr.
Requirements: neuroscience graduate standing.