Neuroscience

NSC 1100 First Year Seminar (1 semester hour) This course is designed to introduce incoming freshmen to the intellectual and cultural environment of the School of Behavioral and Brain Sciences (BBS). Students will learn about plans of study and career paths for majors in Psychology, Neuroscience, Speech Language Pathology and Audiology, Child Learning and Development, and Cognitive Science. Required for all freshman Behavioral and Brain Sciences majors; open to all non-BBS majors. Corequisite: UNIV 1010. (Same as CLDP 1100 and CGS 1100 and PSY 1100 and SPAU 1100) (1-0) Y

NSC 3344 Anatomy and Physiology of Speech and Hearing (3 semester hours) Study of anatomic and physiologic mechanisms underlying speech: respiration, phonation, and articulation. Overview of the peripheral auditory system, neuroanatomy, and normal swallowing. (Same as SPAU 3344) (3-0) Y

NSC 3345 Neural Basis of Communication (3 semester hours) Organization and function of cortical and subcortical structures that underlie speech, language and hearing. Special consideration of structures and pathways typically affected in neurogenic disorders of communication. (Same as SPAU 3345) (3-0) Y

NSC 3361 Behavioral Neuroscience (3 semester hours) Introductory course that explores the nature of the brain processes underlying behavior, including consideration of basic neurophysiology and the physiology of sensation, learning, and emotion. (3-0) S

NSC 4188 Dean's Scholars' Seminar (1 semester hour) A course for students enrolled in the Dean's Scholars' Program (minimum 3.600 GPA and 30 graded hours at UTD) who wish to pursue doctoral-level professional careers. The seminar introduces scholars to the quality and demands of doctoral-level careers and includes service activities in BBS. Aims of the seminar include 1) learning about requirements for admission into doctoral level programs, 2) meeting with professionals to learn how they built their careers and with BBS faculty to learn about research and internship opportunities, 3) introduction to demands of doctoral-level careers, and 4) participation in BBS service activities. This course is required for all students seeking to graduate as BBS Dean's Scholars. Offered only in fall semester. (Same as CLDP 4188 and CGS 4188 and PSY 4188 and SPAU 4188) (1-0) Y

NSC 4351 Medical Neuroscience (3 semester hours) Discussions of major topics in the medical neurosciences (including coma, stroke, dementia, muscle diseases, etc.) with discussion of neurologic symptoms, signs, and diseases. Coverage of their diagnosis, evaluation, and treatment for students considering advanced medical training. Prerequisite: NSC 3361. (0-3) Y

NSC 4352 Cellular Neuroscience (3 semester hours) The cell biology and cellular physiology of the neuron. Growth and maintenance of dendrites, axons and synapses, and the underlying processes of macromolecule synthesis, packaging, and transport are the central biological issues. Electrical signaling, ion channel functions, and synaptic transmission are covered. Prerequisite: NSC 3361.

(3-0) Y

NSC 4353 Neuroscience Laboratory Methods (3 semester hours) This laboratory course provides hands-on experience with the use of electrophysiological techniques for the analysis of living neural preparations. (This course fulfills the advanced writing requirement for Neuroscience majors and 3 hours of the Communication component of the Core Curriculum). Prerequisites: NSC 3361 and (NSC 4352 or NSC 4356). (0-3) S

NSC 4354 Integrative Neuroscience (3 semester hours) Examines the collective behavior of neuronal systems with respect to sensory processing, motor control, and the plasticity regulating more advanced behavioral, motivational, and cognitive functions. Prerequisite or corequisite: NSC 3361. (3-0) Y

NSC 4355 Advanced Neuroscience Laboratory (3 semester hours) This laboratory course exposes students to a structured research project, with topics selected in consultation with the instructor. It requires students to develop a rationale for experiments and to interpret their results. Each student writes a publication-style paper with reference to the scientific literature. Prerequisite: NSC 4353. (0-3) R

NSC 4356 Neurophysiology (3 semester hours) This course focuses on the elements of neural functions ranging from the kinetics of channels in excitable membranes to the collective behavior of real neural networks. Prerequisite: NSC 4352. (3-0) Y

NSC 4357 Neurobiology of Learning and Memory (3 semester hours) Current research and theory on modifications in the nervous system that may underlie memory. Includes overviews of synaptic physiology and behavioral pharmacology, and concepts of neural plasticity revealed from research findings. Prerequisite: NSC 4354. (3-0) T

NSC 4358 Neurobiology of Pain (3 semester hours) A review of the anatomical and physiologic basis for different forms of pain, with an emphasis on similarities and differences between different forms of pain. Basic neural processing of pain signals in the dorsal horn of the spinal cord and the brain, including the anatomy and function of the ascending and the descending systems are covered. Prerequisite: NSC 3361. (3-0) T

NSC 4359 Cognitive Neuroscience (3 semester hours) Examines how modern cognitive neuroscientists explore the neural underpinnings of perception, memory, attention, language and emotion. Investigates how the brain-bases of these functions are uncovered by ingenious observations of clinical populations (including brain-damaged and schizophrenic patients), animal and human electrophysiological techniques, and powerful new functional neuroimaging tools. Prerequisite: PSY 2301. (Same as CGS 4359 and PSY 4359) (3-0) Y

NSC 4362 Molecular Neuroscience (3 semester hours) Examines the regulation and expression of major macromolecules of neurons and glia, including DNA, RNA and proteins. Interdependence of major pathways, and the effects of development and experience on molecular mechanisms will be explored. Prerequisite: NSC 4352. (3-0) T

NSC 4363 Neuropharmacology (3 semester hours) A survey of neurotransmitter functions with special emphasis on effects in the central nervous system. Emphases on ion channels and receptors, and on neurotransmitter metabolism, transport and release. Mechanisms of action from the subcellular to whole organism level are discussed. Prerequisite: NSC 4352 or NSC 4354. (3-0) Y

NSC 4366 Neuroanatomy (3 semester hours) Introduction to the anatomical organization and basic functional principles of the major sensory, motor, associational, and modulatory systems of the human brain. Students learn to identify visually specific structures on slides, magnetic resonance images (MRI), and dissected brain specimens in relation to neural pathways and system interconnections. This course provides a basis for a general understanding of the human brain and its functions in relation to disease and behavior. Prerequisite: NSC 3361 or BIOL 2311. (3-0) Y

NSC 4367 Developmental Neurobiology (3 semester hours) Examines the processes guiding the proliferation, differentiation and migration of neurons as they form transient or long-lasting connections and circuits. Prerequisite: NSC 4352 or NSC 4354. (3-0) Y

NSC 4370 Neuroendocrinology (3 semester hours) A detailed examination of central nervous system regulation of the endocrine system, primarily via the hypothalamic-pituitary-adrenal axis. Examines feedback effects of hormonal actions on neuronal function. Prerequisite: NSC 4366. (3-0) T

NSC 4371 Neural Plasticity (3 semester hours) Review of the basic principles of neural plasticity. Special emphasis on cortical or subcortical plasticity related to development, recovery from injury and adaptations to the external world involved in learning and memory. Prerequisite: NSC 3361. (3-0) T

NSC 4373 Sensory Neuroscience (3 semester hours) Review of the basic principles of neural information processing, with emphasis on the central nervous system processes underlying one or more sensory modalities. Readings and discussion of classic and modern primary papers. Prerequisite: NSC 3361. (3-0) T

NSC 4374 Neuroplasticity in Disorders of the Nervous System (3 semester hours) The symptoms and signs of multiple disorders caused by reorganization or plasticity of the central nervous system. A review of the neural plasticity underlying the pathophysiology of disorders such as chronic pain, tinnitus, balance disorders, spasticity, etc., i.e. a "dark side" of plasticity not widely recognized. Prerequisite: NSC 4352. (3-0) T

NSC 4375 Honors Seminar (3 semester hours) A course for students enrolled in the Honors Program (minimum 3.500 GPA and 30 graded hours at UTD) who will conduct undergraduate thesis research in BBS. The seminar attempts to hone skills of critical thinking, creativity, and effective written and oral communication. By the end of the seminar, all students will have determined 1) a thesis approach, 2) a research question(s), and 3) a faculty sponsor and second reader. This course is required for students seeking BBS School Honors (see Honors Program Manual for more information). Permission of Director of the Honors Program required. Offered only in spring semester. (Same as CLDP 4375 and CGS 4375 and PSY 4375 and SPAU 4375) (3-0) Y

NSC 4376 Neurobiology of Stress (3 semester hours) Studies of the effects of stressors (specific and nonspecific) on bodily systems, with respect to health and disease and maintenance of homeostatic equilibria. Neural, endocrine, and immune interactions will be assessed. Prerequisite: NSC 4354. (3-0) T

NSC 4378 Neurotoxicology (3 semester hours) An overview of modern toxicology as it affects the nervous system. Adverse effects of xenobiotics and neurotoxins, hypo or hyperactivation of neuromodulatory and hormonal systems. Prerequisite: NSC 4352 or NSC 4363. (3-0) T

NSC 4385 Neuropsychology (3 semester hours) This course is a comprehensive introduction of the relationship between brain and behavior. Topics include the foundations of neuropsychology, the brain's organization and functional systems, and neuropsychological perspectives of memory, attention, language, emotion, and spatial functions, and their related disorders. Prerequisite: NSC 3361. (Same as CGS 4385 and PSY 4385) (3-0) T

NSC 4386 Adult Development and Aging (3 semester hours) This course is designed to provide an overview of theories, methods, and research on the psychological, social, and biological aspects of adult development and aging. A selection of topics to be covered includes lifespan developmental theories, research methodology, cognitive aging, compensation and successful aging, personality development, health, coping, social-emotional development, and to understand the nature and multiple influences of development throughout the adult lifespan. Prerequisite: PSY 2301. (Same as CGS 4386 and PSY 4386 and SPAU 4386) (3-0) T

NSC 4394 Internship in Neuroscience (3 semester hours) Students earn course credit for field experience in an applied setting. Requires working at least 8 hours per week at an approved community agency or business of the student's choice. Students keep daily job diaries, attend one class meeting per month, and write brief papers relevant to their experiences. Open to students in good academic standing with a GPA of at least 2.500 who have reached junior or senior standing (more than 53 hours). Apply for placements on the BBS website. Graded Credit/No Credit only. (Same as CGS 4394 and CLDP 4394 and PSY 4394 and SPAU 4396) (3-0) S

NSC 4397 Thesis Research (3 semester hours) An independent study in which the student writes a thesis under faculty supervision. Instructor and Associate Dean consent required. (3-0) S

NSC 4v90 Special Topics in Neuroscience (1-6 semester hours) May be repeated for credit as topics vary (9 hours maximum). ([1-6]-0) R

NSC 4v95 Externship in Neuroscience (1-3 semester hours) Students earn course credit for directed research performed at approved laboratories at UT Southwestern or other local neuroscience centers. Student must obtain permission from a supervising NSC faculty member at UT Dallas. Taken on a credit/no credit basis. May be repeated for credit (9 hours maximum). ([1-3]-0) R

NSC 4v96 Teaching Internship (1-3 semester hours) Students work individually with faculty member in preparing and presenting course materials and tutoring students. Must have completed the relevant course with a grade of at least B. Instructor and Associate Dean consent

required. Taken on a credit/no credit basis. May be repeated for credit (6 hours maximum). ([1-3]-0) S

NSC 4v98 Directed Research (1-3 semester hours) Student assists faculty with research projects or conducts a research project under weekly faculty supervision. Instructor consent required. Taken on a credit/no credit basis. May be repeated for credit (9 hours maximum). ([1-3]-0) S

NSC 4v99 Independent Study (1-3 semester hours) Student studies advanced topics under weekly faculty supervision. Instructor and Associate Dean consent required. Taken on a credit/no credit basis. May be repeated for credit (6 hours maximum). ([1-3]-0) S