PHYSIOLOGY AND NEUROBIOLOGY (PNB)

PNB 1000. Introduction to Academic and Scientific Methods in Physiology and Neurobiology. (2 Credits)
A project-based introduction to scientific methods for first-year declared and prospective Physiology and Neurobiology students. May include discussions of educational and laboratory based research in Physiology and Neurobiology. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
Enrollment Requirements: Open to first-year students majoring in Physiology and Neurobiology, others with instructor consent.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%201000)

PNB 1201. Learning by Experiencing and Applying Physiological Principles I. (1 Credit)
Introduction to the principles governing gene organization, regulation of transcription, transcript processing, protein production, protein function, and outputs of physiological interest.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%201201)

PNB 2201. Learning by Experiencing and Applying Physiological Principles II. (2 Credits)
Exploration of the role that gene regulation, transcript processing, protein production, and protein function play in the physiology of limb development. Emphasis placed on understanding and communicating primary literature, and experimental systems used in model organisms.
Enrollment Requirements: PNB 1201.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202201)

PNB 2250. Comparative Animal Physiology. (3 Credits)
An introduction to comparative animal physiology, emphasizing the evolutionary impacts of diverse physical, chemical, and environmental factors on vertebrates and invertebrates.
Enrollment Requirements: BIOL 1107. Recommended preparation: BIOL 1108.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202250)

PNB 2264. Human Physiology and Anatomy. (4 Credits)
Fundamentals of human anatomy and physiology, for students in human health and human performance related majors. Topics covered include the musculoskeletal system, membrane potential, neurophysiology, the central nervous system, sensation, and the endocrine system. May not be counted toward the Biological Sciences or PNB majors.
Enrollment Requirements: BIOL 1107; CHEM 1122 or 1124Q or 1127Q. Not open to students who have passed PNB 2274. May not be taken out of sequence after passing PNB 2265. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for more information.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202264)

PNB 2265. Human Physiology and Anatomy. (4 Credits)
Fundamentals of human anatomy and physiology, for students in human health and human performance related majors. Topics covered include the cardiovascular, immune, respiratory, digestive, renal, and reproductive systems. May not be counted toward the Biological Sciences or PNB majors.
Enrollment Requirements: PNB 2264. Not open to students who have passed PNB 2275. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for information.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202265)

PNB 2274. Enhanced Human Physiology and Anatomy. (4 Credits)
Fundamentals of human physiology and anatomy enhanced through inquiry-based laboratories.
Enrollment Requirements: BIOL 1107; CHEM 1124Q or 1127Q. Not open for credit to students who have passed PNB 2264. May not be taken out of sequence after passing PNB 2275, 3264, or 4162. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for details.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202274)

PNB 2275. Enhanced Human Physiology and Anatomy. (4 Credits)
Fundamentals of human physiology and anatomy enhanced through inquiry-based laboratories.
Enrollment Requirements: PNB 2274. Not open to students who have passed PNB 2265. Must be taken after PNB 2274 to count for credit. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for information.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202275)

PNB 2774. Enhanced Human Physiology and Anatomy I. (4 Credits)
Fundamentals of human physiology and anatomy enhanced through discussion. A focus on fundamental cell and membrane physiology, as well as the musculoskeletal, nervous, and endocrine systems.
Enrollment Requirements: BIOL 1107; CHEM 1122 or CHEM 1124Q or CHEM 1127Q. Not open for credit to students who have passed PNB 2264 or PNB 2274. May not be taken out of sequence after passing PNB 2775. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for details.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202774)

PNB 2775. Enhanced Human Physiology and Anatomy II. (4 Credits)
Fundamentals of human physiology and anatomy enhanced through discussion. A focus on organ systems, including the cardiovascular, respiratory, lymphatic, digestive, renal, and reproductive systems.
Enrollment Requirements: PNB 2774. Not open to students who have passed PNB 2265 or PNB 2275. Repeat restrictions apply; see advising.uconn.edu/repeat-policy for information.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202775)

PNB 2776. Enhanced Human Physiology and Anatomy Laboratory. (2 Credits)
Fundamentals of human physiology and anatomy enhanced through inquiry-based laboratories.
Enrollment Requirements: PNB 2775, which may be taken concurrently. Not open to students who have passed PNB 2264, PNB 2265, PNB 2274, or PNB 2275.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%202776)

PNB 3120W. Public Communication of Physiology and Neurobiology. (3 Credits)
Strategies for effective public communication of science, focusing on accessibly conveying physiological concepts, and considering the role of life scientists as public communicators. Student work may include storytelling, blogging, data visualization, and videography.
Enrollment Requirements: One 2000-level course in PNB; ENGL 1007 or 1010 or 1011 or 2011; open only to Physiology and Neurobiology majors.
Skill Codes: COMP. Writing Competency
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203120W)

PNB 3178. Introduction to Drosophila Models in Physiology and Neurobiology Research. (2 Credits)
Exploration of Drosophila as a model organism for addressing molecular, cellular, and anatomical research questions in Physiology and Neurobiology. Students will gain hands-on laboratory experience with fly husbandry, analysis of phenotypic markers, microdissection, microscopy, and behavioral assays such as mating, circadian rhythm, aggression, and learning. Open to all students meeting the prerequisites, no prior laboratory experience is necessary.
Enrollment Requirements: PNB 2274 or 2774. Recommended Preparation: PNB 2275 or 2775 or PNB 2250.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203178)

PNB 3179. Molecular Physiology in Drosophila Models. (2 Credits)
Molecular and cellular techniques used to answer physiology research questions in Drosophila models. Students will gain hands-on laboratory experience measuring lifespan, ovulation, fecundity, tissue remodeling, respiration rate, and metabolic parameters. Assays may include western blotting, immunoprecipitation, immunohistochemistry, spectroscopy, PCR, and mass spectrometry.
Enrollment Requirements: PNB 3178; Students with related research experience may enroll with instructor consent. Recommended Preparation: PNB 2275 or 2775 or 2250.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203179)

PNB 3180. Field Study in Physiology and Neurobiology. (1-4 Credits)
Supervised field work at an off-campus research organization or business. Activities that meet objectives consistent with a major in Physiology and Neurobiology must be planned and agreed upon in advance by the job site supervisor, the faculty coordinator and the student. May be repeated for a total of up to 6 credits. One credit may be earned for each 42 hours of pre-approved activities up to a maximum of 4 credits. May be applied towards the major with permission of department head subject to the PNB major's 3-credit research group limitation. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
May be repeated for a total of 6 credits
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203180)

PNB 3251. Biology of the Brain. (3 Credits)
Brain functions, from molecular and cellular to overall central nervous system organization. Topics of current scientific interest.
Enrollment Requirements: One 2000 level course in PNB or consent of instructor; open to juniors or higher. May not be taken out of sequence after passing PNB 3253W.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203251)

PNB 3252. Physiological Model Systems. (3 Credits)
Comparative exploration of classic and emerging model organisms and their translational research applications towards human health and well-being. Environmental, ethical, and policy considerations relating to animal experimentation.
Enrollment Requirements: A 2000-level PNB course. Recommended preparation: Undergraduate class in basic comparative animal physiology such as BIOL 1108 or EEB 2214 or PNB 2250.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203252)

PNB 3253W. Current Topics in Molecular and Developmental Neurobiology. (3 Credits)
Current topics from primary literature. Molecular mechanisms of brain and nervous system development.
Enrollment Requirements: PNB 3251; ENGL 1007 or 1010 or 1011 or 2011; open to juniors and seniors only. Recommended preparation: PNB 2274 and 2275 or 2774 and 2775.
Skill Codes: COMP. Writing Competency
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203253W)

PNB 3255. Human Neuroanatomy. (2 Credits)
Anatomy of the human brain and spinal cord; emphasis on the structure and functions of major regions in the central nervous system.
Enrollment Requirements: PNB 2264 or 2274; open to juniors or higher.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203255)

PNB 3260. Stem Cell Biology. (3 Credits)
Principles of stem cell biology and the use and applications of stem cells in research and therapy. Emphasis on molecular, cellular and physiological properties of stem cells, mechanisms of differentiation, use of recombinant DNA technology and application of stem cells in disease models.
Enrollment Requirements: PNB 2250 or PNB 2274. Recommended preparation: MCB 2000 or MCB 2210 or MCB 2410, any of which may be taken concurrently.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203260)

PNB 3263WQ. Investigations in Neurobiology. (3 Credits)
Experimental investigations in neurobiology. Emphasis on designing and carrying out independent research projects, and on communicating the results.
Enrollment Requirements: PNB 2250 or PNB 2274-2275; ENGL 1007 or 1010 or 1011 or 2011 or 3800; open to juniors or higher.
Skill Codes: COMP. Quantitative Competency, COMP. Writing Competency
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203263WQ)

PNB 3264W. Molecular Principles of Physiology. (4 Credits)
Case study of a disease: genetics and inheritance patterns; molecular defects, including transcription and post-transcription defects; physiological defects; therapeutic approaches.
Enrollment Requirements: PNB 2274, MCB 2210 or 2410 or 3010; ENGL 1007 or 1010 or 1011 or 2011; open to juniors or higher; instructor consent required.
Skill Codes: COMP. Writing Competency
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203264W)

PNB 3265. Comparative Endocrinology. (3 Credits)
The evolution of hormonal signaling systems in invertebrates and vertebrates.
Enrollment Requirements: A 2000-level course in PNB or instructor consent. Open to juniors or higher.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203265)

PNB 3270. Molecular Endocrinology. (3 Credits)
Molecular mechanism(s) of hormone action in vertebrates and invertebrates. Molecular and genetic characterization of hormones, receptors, and signal transduction, and hormone actions at the molecular, cellular, and organismal levels. Includes student presentations on selected papers.
Enrollment Requirements: BIOL 1107; open to juniors or higher. Recommended preparation: PNB 3262.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203270)

PNB 3275. Biology of Synaptic Transmission. (2 Credits)
Various neurotransmitter systems in the brain including anatomy, physiology, cell biology and biochemistry. Neurotransmitters, receptors and transporters at synapses. Synaptic signaling pathways and molecules. Meets during the first nine weeks of the semester.
Enrollment Requirements: One 2000-level course in PNB or instructor consent; open to juniors or higher. Not open to students who have taken PNB 3276. Recommended preparation: MCB 2000 or 3010.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203275)

PNB 3278. Patient and the Healer. (2 Credits)
Introductory grounding and experience for students interested in the healing professions in how patients and families experience illness, and what it's like to be a professional health provider.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203278)

PNB 3293. Foreign Study. (1-6 Credits)
Special topics taken in a foreign study program. Consent of Department Head or Key Advisor required, normally to be granted prior to the student's departure. May count toward the major with consent of Department Head or Key Advisor.
Enrollment Requirements: Open to juniors or higher.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203293)

PNB 3294. Undergraduate Seminar. (1-6 Credits)
Enrollment Requirements: Open to juniors or higher.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203294)

PNB 3295. Special Topics. (1-6 Credits)
Enrollment Requirements: Prerequisites and recommended preparation vary; Open only to juniors or higher.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203295)

PNB 3296. Undergraduate Research in Physiology and Neurobiology. (1-4 Credits)
Students may apply up to a maximum of three credits of PNB 3296 or PNB 4296 toward the credits-in-major requirement.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203296)

PNB 3298. Variable Topics. (3 Credits)
Enrollment Requirements: Prerequisites and recommended preparation vary by section; open to juniors or higher.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203298)

PNB 3299. Independent Study. (1-6 Credits)
Designed for the advanced undergraduate student who desires to pursue a special problem as an introduction to independent investigation.
May be repeated for credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203299)

PNB 3350. Membrane Transport in Health and Disease. (3 Credits)
Fundamental mechanisms by which water and small molecules are transported across biological membranes. Biophysical and biochemical analysis of transport by diffusion, osmosis, channels, carriers and pumps in health and disease.
Enrollment Requirements: One 2000 level course in PNB or consent of instructor; open to juniors or higher.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203350)

PNB 3500. Cardiorespiratory Physiology. (2 Credits)
Cellular and molecular mechanisms controlling cardiovascular and respiratory function in health and disease.
Enrollment Requirements: One 2000 level course in PNB or consent of instructor; open to juniors or higher.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203500)

PNB 3700. Sensory Physiology. (3 Credits)
Cellular and molecular mechanisms supporting the detection of sensory stimuli in vertebrates, invertebrates and other organisms. Detection of chemicals, touch, temperature, pain, sound, light, heat, magnetic fields, and electricity.
Enrollment Requirements: PNB 2274 or 3251 or instructor consent; open to juniors or higher.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%203700)

PNB 4296. Honors Undergraduate Research In Physiology and Neurobiology. (1-3 Credits)
Students may apply up to a maximum of three credits of PNB 3296 or 4296 toward the credits-in-major requirement. Not restricted to students in the Honors program.
Enrollment Requirements: Instructor consent.
May be repeated for credit
Grading Basis: Honors Credit
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%204296)

PNB 4297W. Senior Research Thesis in Physiology and Neurobiology. (3 Credits)
Special research or independent investigatIon for advanced undergraduates. Involves research and writing a thesis.
Enrollment Requirements: ENGL 1007 or 1010 or 1011 or 2011. Three credits of PNB 3299, which may be taken concurrently; open to juniors or higher. Open only with consent of instructor and departmental honors committee. Not limited to honors students.
Skill Codes: COMP. Writing Competency
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%204297W)

PNB 4400. Biology of Nervous System Diseases. (3 Credits)
Basic principles of genetics, molecular and cell biology, and physiology as applied to the mechanisms of disease and repair processes in the nervous system. Topics include established concepts and areas of current research on chronic neurodegenerative, synaptic, and demyelinating disorders, acute trauma and cerebrovascular disorders, and plasticity and repair.
Enrollment Requirements: PNB 2274, 2774, or 3251; one course from MCB 2000, 2210, 2400, 2410, or 3010; or instructor consent.
View Classes (https://catalog.uconn.edu/course-search/?details&code=PNB%204400)