

ANATOMY AND NEUROBIOLOGY (ANAT)

ANAT 301. Head and Neck Anatomy for Dental Hygienists. 3 Hours.

2 lecture and 1 seminar hours. 3 credits. An overview of head and neck anatomy that examines the major osteological, neural, muscular, vascular and visceral features. Lectures will be supplemented by textbook, self-study packages and by brief laboratory exercises that provide hands-on exposure to these major anatomical features.

ANAT 302. Microscopic Anatomy (Dental Hygiene). 2 Hours.

8-week course; 3 lecture and 1 laboratory hours. 2 credits. A lecture course in the microscopic anatomy of the cells and tissues relevant to the oral cavity.

ANAT 501. Dental Gross Anatomy. 6.5 Hours.

Semester course; 4 lecture and 3 laboratory hours. 6.5 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

ANAT 502. Microscopic Anatomy (Dentistry). 5 Hours.

Semester course; 44 lecture and 88 laboratory hours. 5 credits. A study of the normal tissues and organs of the human body at the microscopic level, with emphasis on the histological organization and development of the oral cavity.

ANAT 503. Dental Neuroanatomy. 1 Hour.

Semester course; 1 lecture hour. 1 credit. Through this course, students will develop broad-level knowledge of neuroanatomical structures and principles and the role of the nervous system. Dental clinical correlations will be used to illustrate the future clinical necessity for and application of this scientific background.

ANAT 505. Principles of Human Anatomy (Pharmacy). 3 Hours.

Semester course; 2.5 lecture and 1.5 laboratory hours. 3 credits. The structure of the human body is surveyed by studying micro-, neuro-, and gross anatomy. Emphasis is placed on basic concepts and their application to various body components.

ANAT 525. Advanced Functional Anatomy (Occupational Therapy). 5 Hours.

Semester course; 3 lecture and 4 laboratory hours. 5 credits. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand. Enrollment requires admission to the M.S.O.T. program.

ANAT 608. Functional and Clinical Neuroanatomy. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Survey of the basic morphological and functional aspects of the mammalian nervous system, with emphasis on functionally and clinically relevant neuroanatomical concepts.

ANAT 609. Human Gross Anatomy. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Enrollment is restricted to students in the Certificate in Pre-Medical Graduate Health Sciences or the M.S. in Anatomy and Neurobiology. Macroscopic study of the human body, with clinical correlations, dissection and pro-section sessions. Some classes will include laboratory time.

ANAT 610. Systems Neuroscience. 4 Hours.

Semester course; 4 lecture hours. 4 credits. A study the neural circuits and function of systems in the central nervous system. Topics include sensory perception and integration, neural control of reflexes and voluntary movement, as well as a neural-systems approach to understanding certain diseases.

ANAT 611. Histology. 4 Hours.

Semester course; 3 lecture and 1 laboratory hours. 4 credits. Enrollment is restricted to students in the pre-medical graduate health sciences certificate program. A study of the basic light and electron microscopic structure of cells, tissues and organs. Emphasis on correlating structure with function.

ANAT 612. Human Embryology. 2 Hours.

Semester course; 2 lecture hours (delivered hybrid). 2 credits. Lectures present an overview of human embryology covering fertilization, implantation and the early stages of embryogenesis. Major organ systems including the gastrointestinal, pulmonary, cardiovascular and urogenital are covered, as well as the development of the limbs and head and neck structures.

ANAT 613. Advanced Studies in Anatomy. 1-6 Hours.

1-6 credits. An in-depth study in specific areas of anatomy: histology, gross anatomy, and neuroanatomy.

ANAT 615. Techniques in Neuroscience and Cell Biology. 3 Hours.

Semester course; 4 lecture/lab hours. 3 credits. Recommended preparation: BIOC 503-504 or equivalent. Designed to provide in-depth coverage of techniques commonly used in neuroscience and cell biology. Topics include tissue processing for light and electron microscopy, immunocytochemistry, laser confocal microscopy, protein purification and analysis, molecular approaches to the study of the nervous system, genetic manipulation of protein expression, gene arrays, transgenic and knockout animal models, and electrophysiological techniques including single and multi-unit extracellular recording, sharp intracellular recording and patch clamp recording. Consists of one two-hour meeting per week. Graded as Pass/Fail.

ANAT 617. Developmental Neurobiology. 4 Hours.

Semester course; 4 lecture hours. 4 credits. Prerequisite: permission of instructor. Designed to expose students to the fundamental mechanisms underlying the development of the central nervous system, including patterning, birth and death of neurons, axon guidance, formation, maintenance and plasticity of synaptic connections, and glial biology. Emphasis will be on the cellular and molecular aspects of these topics. The course consists of one meeting a week devoted to lectures (two one-hour lectures) and a second meeting devoted to a student-led discussion of scientific papers (two one-hour discussion meetings).

ANAT 619. Professional Skills in Biomedical Research. 2 Hours.

Semester course; 2 lecture hours. 2 credits. Enrollment is restricted to students with an advanced degree or enrolled in an advanced degree program. This hybrid online/in-person course will consist of online modules focused on basic writing skills, presentation skills and familiarization with resources for ongoing learning. In-person meetings will consist of student-led discussion, active revision of submitted work and faculty panel discussions. Fundamental skills will function as a learning opportunity for individuals training for careers in biomedical research. Graded as Pass/Fail.

ANAT 620. Scientific Writing and Grantsmanship. 2 Hours.

Semester course; 2 lecture hours. 2 credits. Lectures present an overview of preparation for writing scientific manuscripts and grant proposals. Emphasis is placed on putting methods of writing into practice. Students will submit written samples to be discussed and critiqued each week. Special sessions on manuscript and grant review processes are included, as well as instruction on how to best utilize electronic and library resources. Graded as Pass/Fail.

ANAT 625. Anatomy of Risk and Resilience: The Biology of Stress. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Designed to expose students to the fundamental mechanisms underlying the influence of endocrinology on behavior with a particular emphasis on risk and resilience. Sex as a biological variable will be a key point of the curriculum. Emphasis will be placed on the cellular and molecular aspects of the biology of sex, stress, adaptation and survival. The course will also address implications of neuroendocrine dysfunction for mental diseases. The course consists of one online module a week related to fundamental information pertinent to understanding neuroendocrinology and a second in-person meeting devoted to a student-led discussion of scientific papers related to the module covered in that week (one-hour discussion).

ANAT 630. Research Presentations. 1 Hour.

Semester course. 1 credit. Weekly research presentations by master's and doctoral students that focus on the students' ongoing research. Course provides a weekly forum for students to develop presentation skills and foster scientific discussion among students and faculty. Graded as Pass/Fail.

ANAT 690. Anatomy and Neurobiology Seminar. 1 Hour.

1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology. Graded as S/U/F.

ANAT 691. Special Topics in Anatomy. 1-4 Hours.

1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of research.

ANAT 697. Directed Research. 1-15 Hours.

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.