ANATOMY AND CELL BIOLOGY

The Department of Anatomy and Cell Biology offers two, premedicine academic enhancer programs for candidates interested in applying to medical schools, physician assistant programs, or biomedical sciences doctoral programs: the graduate certificate in anatomical and translational sciences (GCATS) and master of science in the field of anatomical and translational sciences (M-ATS), a premed special master's program. Both programs are designed to enhance a graduate's competitiveness when applying to medical school, physician assistant programs, or to transition to an advanced graduate degree in biomedical sciences. Applicants select a program based on their level of readiness for admission to a health professional school.

Visit the (http://gsehd.gwu.edu/programs/museum-education/)Department of Anatomy and Cell Biology website (http://smhs.gwu.edu/anatomy/) for additional information.

GRADUATE

Master's program

- Master of Science in the field of anatomical and translational sciences (http://bulletin.gwu.edu/arts-sciences/anatomy/ms-anatomical-translational-sciences/)

CERTIFICATE

Certificate program

- Anatomical and translational sciences (http://bulletin.gwu.edu/arts-sciences/anatomy/certificate-anatomical-translational-sciences/)

FACULTY

Professors: R.G. Hawley, Y. Hu, K.E. Johnson, S.A. Moody (*Chair*), R.H. Miller, K. Peusner, M.A. Stepp

Associate Professors: K. Brown, A. Chiaramello, A. Tzatsos, X. Zheng

Assistant Professors: I. Chung, N. DeVaul, K. DeVeau, T. Efimova, A. Pajoohesh-Ganji, M. Shibata, M. Spencer, V. Taylor

Research Assistant Professor: A. Tavares

Adjunct Instructor: K. Lashley

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-level undergraduate courses that also may be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 1099. Variable Topics. 1-36 Credits.

ANAT 2130. Human Embryology. 3 Credits.
Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2131. Laboratory for Human Embryology. 1 Credit.
Analysis of virtual images of human embryology web site and analysis of models from anatomy and cell biology collection. Restricted to sophomores, juniors, and seniors. Prerequisites: BISC 1111 and BISC 1112; and ANAT 2130, which also may be taken concurrently.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.
Normal histological structure of cells, tissues, and organs. Structural–functional correlates; the relationship between histological structure–function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.
Intensive introductory course on human central (CNS) and peripheral nervous systems, focusing on CNS pathways, connections, effects of lesions, and recent research findings. Restricted to juniors and seniors. Prerequisites: BISC 2202, BISC 2214, and BISC 2322 (may be waived with course director's permission).

ANAT 2181. Human Gross Anatomy. 3 Credits.
The structural and functional organization of the human body, focusing on organ systems-based functions. Clinical applications are used to demonstrate the importance of regional anatomical relationships and their interplay with functional systems. Prerequisites: BISC 1111 and BISC 1112 or with permission of the instructor. Same As: BISC 2581.

ANAT 3099. Variable Topics. 1-12 Credits.

ANAT 5099. Variable Topics. 1-99 Credits.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.
The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences program. Recommended background: Introductory course in biology. Credit cannot be earned for this course and ANAT 2130.

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 4 Credits.
The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance; structural/functional correlates at both the light and electron microscopic levels; alterations in normal histology through disease or injury and the etiology of various disease states; integration of histological concepts with clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences (GCATS) or master's in anatomical and translational sciences (M-ATS) programs. Prerequisites: BISC 1111 and BISC 2202.

ANAT 6160. Human Clinical Neuroanatomy. 3 Credits.
Anatomy and function of the human central and peripheral nervous systems. Emphasis on clinical relevance. Gross and microscopic structure, embryology, and neurophysiology of the brain, spinal cord, and nerves with descriptions of alterations in normal anatomy through disease or injury. Completion of an introductory biology course for science or non-science majors is required prior to enrollment. Restricted to students in the anatomical and translational sciences graduate certificate and Institute for Biomedical Sciences PhD programs or with the permission of the course director.

ANAT 6181. Clinically Oriented Human Gross Anatomy. 4 Credits.
Structural organization of the human body and the relationship of the organization to regional and systems-related functions; application of normal anatomical structure/function relationships to understand clinical implications of disease or injury. The laboratory is used for cadaveric dissection to learn anatomical relationships and basic knowledge of radiographic imaging. Restricted to students in the graduate certificate and master's programs in anatomical and translational sciences and other graduate students with the permission of the course director. Recommended background: Completion of higher-level science courses during the student's undergraduate degree program. Credit cannot be earned for this course and ANAT 2181.

ANAT 6182. Fundamentals of Translational Science. 4 Credits.
Fundamentals of organ development and study; how molecular defects during development can lead to disease. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6215. Anatomy for Physician Assistant Students. 3 Credits.
Lecture and student examination of prosected cadavers. Provides foundational anatomical knowledge for future courses in the physician assistant curriculum. Restricted to graduate students enrolled in the physician assistant program.

ANAT 6216. Cellular Anatomy and Histology. 2 Credits.
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ANAT 6219. Biomedical Ethics for Translational Sciences. 2 Credits.
Ethical issues relevant to the practice of medicine and biomedical research involving human subjects. Permission of the instructor required prior to enrollment. Restricted to graduate students. Recommended background: ANAT 6130, ANAT 6150, ANAT 6160, ANAT 6181 and ANAT 6292.

ANAT 6221. Special Topics in Stem Cell Biology. 1-3 Credits.
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ANAT 6222. Special Topics in Stem Cell Biology. 1-3 Credits.
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ANAT 6223. Special Topics in Regenerative Medicine. 2 Credits.
Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6249. Introduction to Anatomical Research. 1 Credit.
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ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anatomy of Upper and Lower Extremities. 2 Credits.
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ANAT 6264. Gross Anatomy of Head and Neck. 2 Credits.
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ANAT 6266. Gross Anatomy of Thorax and Abdomen. 2 Credits.
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ANAT 6268. Gross Anatomy of Pelvis, Perineum, and Lower Extremities. 2 Credits.
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ANAT 6275. Advanced Studies in Translational Sciences. 3 Credits.
Semester-long rotation in a research laboratory conducting translational researching, applying fundamental concepts learned in didactic courses, and developing versatility with new technologies. Permission of the program director is required. Restricted to students in the graduate certificate and master of science in anatomical and translational sciences programs. Prerequisites: Prior completion of an introductory-level course in biology for science or non-science majors.

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.
Detailed study of an anatomic topic tailored to the needs of the individual student. Restricted to graduate students who are in the Graduate Certificate in Anatomical and Translational Sciences program or who have permission of the program director and medical students.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.
Regional dissection, guided readings.

ANAT 6284. Applied Surface Anatomy and Radiology. 5 Credits.
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ANAT 6291. Special Projects in Anatomy. 1-12 Credits.
Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences: Introduction to Neuroradiology. 1 Credit.
Various imaging techniques and approaches to visualize normal neuroanatomy toward development and application of skills in teamwork, presentation, discussion, and literature searches. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 8120. Graduate Human Gross Anatomy. 5 Credits.
An in-depth introduction to human gross anatomy with cadaveric dissection. The structural organization of the human body, including its regional and systems-related functions. The relationship between normal human anatomical variation in structure and function and how disease and/or injury affect these relationships. Permission of the instructor is required prior to enrollment. Offered spring semester in even years. Restricted to doctoral students with permission of the instructor. Recommended background: Prior coursework in the biological sciences or anthropology.

ANAT 8501. Didactic Anatomy. 3 Credits.
Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8802. Summer Remedial: Human Developmental Anatomy. 1 Credit.
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