

ANATOMY AND CELL BIOLOGY (ANAT)

ANAT 100 Anatomy of the Human Body Units: 3.00

This anatomy course is designed to introduce students to the basic structure and functional relationship of the human body. Through a series of weekly learning modules, students will learn about the basic language of Gross Anatomy and Histology in order to understand the working of various body systems. This course is also suitable for individuals who have a general interest in human anatomy.

Requirements: Exclusion ANAT 101/3.0; IDIS 150/6.0 One-Way Exclusion May not be taken with or after: ANAT 215/3.0; ANAT 216/3.0; ANAT 312/3.0; ANAT 315/3.0; ANAT 316/3.0

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Analyze the gross (macroscopic) and histology (microscopic) anatomy of the tissues and organs that constitute the human body
2. Apply appropriate anatomical terms and concepts for the purpose of identification, effective communication, and critical reading of relevant literature
3. Demonstrate the ability to collaborate and work effectively and respectfully with diverse teams
4. Describe the integrated relationship between histology and gross anatomy with respect to structure and function, and be able to extend that knowledge to various aspects of development and function
5. Employ a systematic logical thinking process to help you recognize anatomical structures and predict the physiological functions of body systems

ANAT 101 Introductory Human Anatomy Units: 3.00

A basic anatomy course with an emphasis on clinical relevance of structure and function of human body systems. RECOMMENDATION 4U Biology.

Requirements: Exclusion ANAT 101/3.0; IDIS 150/6.0 One-Way Exclusion May not be taken with or after: ANAT 215/3.0; ANAT 216/3.0; ANAT 312/3.0; ANAT 315/3.0; ANAT 316/3.0

Offering Faculty: Faculty of Health Sciences

ANAT 215 Principles of Human Morphology I Units: 3.00

The general principles of human structure and function as appreciated through a survey of the morphological sciences, including: history of anatomy; embryology; neuroanatomy; developmental, microscopic and gross anatomy of the locomotor system.

NOTE Priority will be given to students registered in a LISC Specialization Plan.

Requirements: Prerequisite (BIOL 102 and BIOL 103) or (BIOL 201 and BIOL 202) or permission of the Department of Biomedical Molecular Sciences. Exclusion ANAT 315.

Offering Faculty: Faculty of Health Sciences

ANAT 216 Principles of Human Morphology II Units: 3.00

The general principles of human structure and function as appreciated through a survey of the development, microscopic and gross anatomy of the body systems: cardiovascular, respiratory, immune/lymphatic, endocrine, digestive and genitourinary.

NOTE Priority will be given to students registered in a LISC Specialization Plan.

Requirements: Prerequisite ANAT 215. Exclusion ANAT 316.

Offering Faculty: Faculty of Health Sciences

ANAT 270 Human Anatomy and Morphology Units: 3.00

This course is designed to introduce the foundations of human structure and function to students at all levels of post-secondary education. Through a series of learning modules, students will develop an understanding of the architecture of the human body through interactive study using a virtual cadaver. This course will survey the gross and microscopic anatomy of the body organ systems including the skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic/immune, respiratory, digestive, urinary and reproductive systems.

NOTE Only offered online. Consult the Bachelor of Health Sciences program office.

NOTE May not be taken for credit towards the Plan requirements of the LISC Specialization or Major Plans.

Learning Hours: 120 (60 Online Activity, 60 Private Study)

Requirements: Prerequisite Level 2 and one of (ANAT 100; BIOL 102; PHGY 170) One-Way Exclusion May not be taken with or after ANAT215; ANAT216; ANAT315; ANAT316.

Offering Faculty: Faculty of Health Sciences

**ANAT 309 Functional Histology Units: 3.00**

Introduction to mammalian histology, or microscopic anatomy, a branch of anatomical sciences focusing on structures and functions of tissues and cells at the light and electron microscope level. Structure-function relationships within many tissues and organs at the cell and tissue level will be a focus.

NOTE Priority will be given to students registered in a LISC Specialization Plan or Health Sciences plan.

Learning Hours: 120 (36 Lecture, 24 Laboratory, 60 Private Study)

Requirements: Prerequisite Level 3 or above and (PHGY 170 or BIOL 102 or BIOL 103 or BIOL 202).

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Compare, contrast and discuss the differences in the organization and structure of the four basic tissue types and their association into organs and systems
2. Describe normal structure-function relationships within cells and tissues as well as recognize abnormal histology, such that a prediction of the consequences of this disruption can be made for a disease state
3. Recognize and describe the organization of the mammalian cell and the function of the major cell organelles
4. Using histological sections, identify the four basic tissue types and various tissues, organs and cell types

ANAT 312 Functional Neuroanatomy Units: 3.00

Study of the structure and function of the nervous system by lectures, hands-on laboratories, brain dissection, and readings. Topics include, but are not limited to, sensory and motor systems, brain imaging, and clinical examples.

Requirements: Prerequisite (ANAT 215 and ANAT 216) or (ANAT 315 and ANAT 316) or (PHGY 215 and PHGY 216).

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Understand and apply appropriate anatomical terms and concepts for the purpose of identification, effective communication and critical reading of relevant literature.
2. Analyze the gross (macroscopic) and histological (microscopic) anatomy of the tissues and organs that constitute the human nervous system.
3. Employ a systematic logical thinking process to help you recognize anatomical structures and predict the physiological functions of the nervous system.
4. Describe the integrated relationship between gross and histological neuroanatomy with respect to structure and function, and be able to extend that knowledge to various aspects of development and function.
5. Demonstrate an ability to collaborate and work effectively and respectfully with diverse teams.

ANAT 315 The Human Musculoskeletal System Units: 3.00

Gross and functional anatomy of the back, body wall, upper and lower limbs, including blood supply and neural controls.

Requirements: Prerequisite (BIOL 102 and BIOL 103) or (BIOL 201/3.0 and BIOL 202/3.0) or KNPE 153. Exclusion ANAT 215.

Offering Faculty: Faculty of Health Sciences

ANAT 316 The Human Visceral Systems Units: 3.00

Gross and functional anatomy of the thorax, abdomen and pelvis, head and neck.

Requirements: Prerequisite ([BIOL 102 and BIOL 103] or [BIOL 201/3.0 and BIOL 202/3.0] or KNPE 153) or permission of the Department of Biomedical and Molecular Sciences. Exclusion ANAT 216.

Offering Faculty: Faculty of Health Sciences

ANAT 380 Clinically Relevant Human Anatomy Units: 3.00

ANAT 380 will explore regional anatomy of the human body focusing on the major organ systems, their components, and the relationships between them. In this course, students will apply anatomical knowledge to collaboratively solve case-based clinical scenarios, and develop a realistic clinical case based on an underlying anatomical issue.

Note: Also offered online.

Learning Hours: 120 (48 Online Activity, 72 Private Study)

Requirements: Minimum 3rd year standing one of:

ANAT 100 OR ANAT 101 OR ANAT 215/216 OR ANAT 315/316

AND one of: PHGY 215/216 OR KNPE 125/225

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Analyze the gross anatomy of the organs that constitute the different regions of the human body to predict the physiological functional relationship. (PLO 2, 3, 6, 8; Assessment 1-4)
2. Integrate module content, medical terminology, and external medical literature to collaboratively solve case-based problems related to anatomical issues. (PLO 2, 8; Assessment 1, 2, 4)
3. Apply knowledge gained from course content to develop an anatomically accurate clinical scenario and clearly communicate orally both anatomical and medical terminology. (PLO 2, 8; Assessment 2)

ANAT 391 Introduction to Cadaveric Dissection Units: 3.00

Students work individually and collaboratively to develop macro and microdissection skills using human cadaveric specimens. Students learn how cadaveric dissection for teaching purposes (prosection) influences communication and teaching of anatomy.

Learning Hours: 120 (36 Laboratory, 48 Online Activity, 36 Private Study)

Requirements: Prerequisite Minimum 3rd year (level 3) standing, registration in a LISC/BCHM/BHSc Major or Specialization Plan, and a minimum standing of B+ in one of ([ANAT 100/3.0 or ANAT 101/3.0; and ANAT 380/3.0]; [ANAT 215/3.0 and ANAT 216/3.0]; [ANAT 315/3.0 and ANAT 316/3.0]).

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Dissect and display gross and microscopic anatomical features on a human cadaveric specimen using conventional and novel dissection techniques, producing a high-quality museum worthy specimen.
2. Critically develop and appraise questions and concepts related to gaps in contemporary anatomical pedagogy to create a feasible research question.
3. Clearly communicate the process of dissection and major findings from completed student work to contextualize dissection as a tool for teaching anatomy and in a research setting.

ANAT 409 Selected Topics in Histology Units: 3.00

A focused histological and cell biological study of three selected mammalian tissues, organs and/or systems.

Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of ([ANAT 215/3.0 and ANAT 216/3.0]; (ANAT 315/3.0 and ANAT 316/3.0); ANAT 309/3.0).

Offering Faculty: Faculty of Health Sciences



ANAT 417 Mammalian Embryonic Development Units: 3.00

Comprehensive overview of cellular and molecular mechanisms that direct embryogenesis including gastrulation, neurulation, establishment of body axes, differentiation, sex determination, limb development, organogenesis, and teratology. Participation in seminar presentations and group discussions is required.

Learning Hours: 114 (24 Lecture, 12 Seminar, 1 Individual Instruction, 77 Private Study)

Requirements: Prerequisite Level 4 and a GPA of 2.5 and (registration in a LISC Major or Specialization Plan) and (ANAT 309 or [ANAT 215 and ANAT 216] or [ANAT 315 and ANAT 316]).

Course Equivalencies: ANAT 417, ANAT 471

Offering Faculty: Faculty of Health Sciences

ANAT 471 Human Embryology Units: 3.00

In ANAT 471, students work individually/collaboratively to explore stages of normal human embryonic and fetal development and how changes in underlying mechanisms link to common congenital or developmental abnormalities. Various assessments include quizzes, a journal club, a PBL investigating a developmental abnormality, a midterm and final exam.

Learning Hours: 120 (48 Online Activity, 72 Private Study)

Requirements: Prerequisite Level 3 or above and one of ([ANAT 100 and ANAT 380] or [ANAT 101 and ANAT 380] or [ANAT 215 and ANAT 216] or [ANAT 315 and ANAT 316]).

Course Equivalencies: ANAT 417, ANAT 471

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Apply knowledge from course content and external peer-reviewed literature to predict the functional sequelae of abnormal physiological development as well as linking the condition to medical interventions.
2. Critically develop and appraise questions and concepts related to gaps in contemporary embryological knowledge to create a cogent research proposal
3. Identify and describe the embryological development of tissues, organs and systems as well as how changes in the process can be linked to abnormal physiological development.

ANAT 499 Research Project in Anatomy and Cell Biology Units: 12.00

An examination of the development and present state of knowledge in selected research areas of Anatomy and Cell Biology. Research project involves experimental design, data collection and analysis, written report, poster presentation and oral presentation. Students will be required to attend seminars and tutorials on topics related to research. Limited enrolment; restricted to fourth year honours, permission of the department required.

NOTE Acceptance by a supervisor required prior to registration.

NOTE Students whose research requires the care and/or handling of animals must also complete the Introductory Animal Care Course and if required the appropriate Animal Use workshops through the Office of the University Veterinarian.

Learning Hours: 480 (288 Laboratory, 24 Group Learning, 24 Individual Instruction, 144 Private Study)

Requirements: Prerequisite Level 4 and registration in a LISC Specialization Plan and a cumulative GPA of 2.50 or higher and ([ANAT 215/3.0 and ANAT 216/3.0] or ANAT 309/3.0 or [ANAT 315/3.0 and ANAT 316/3.0]). Exclusion Maximum 12.0 units from: ANAT 499/12.0; ANAT 599/6.0; BCHM 421/6.0; BCHM 422/6.0; BCHM 594/3.0; BCHM 595/6.0; BCHM 596/12.0; CANC 499/12.0; DISC 591/3.0; DISC 592/3.0; DISC 593/3.0; DISC 594/3.0; DISC 598/6.0; DISC 599/6.0; EPID 499/12.0; EPID 595/6.0; HSCI 591/3.0; HSCI 592/3.0; HSCI 593/3.0; HSCI 594/3.0; HSCI 595/3.0; HSCI 598/6.0; HSCI 599/6.0; LISC 499/12.0*; LISC 594/3.0; LISC 595/6.0; LISC 596/12.0; LISC 598/9.0; MICR 499/12.0; NSCI 499/12.0; PATH 499/12.0; PATH 595/6.0; PHAR 499/12.0; PHGY 499/12.0; REPD 499/12.0.

Offering Faculty: Faculty of Health Sciences

ANAT 599 Research Inquiry in Anatomy Units: 6.00

ANAT 599 is a course on collaborative research in the Anatomical Sciences. Students will use a team-based approach to devise a research question that addresses a gap in knowledge in the Anatomical Sciences. Research questions may include basic science queries based in human anatomy, and questions related to teaching and learning in the Anatomical Sciences. In small groups, students will develop and carry out comprehensive research objectives, and draft a complete manuscript of the summative work intended for publication in a peer-reviewed academic journal. Using the skills previously gained in ANAT 391, students will also produce a high-quality prosected human anatomical specimen. The goal of prosection is to dissect a specimen in a stepwise manner aimed at teaching the dissected structures. To develop proficiencies in online anatomical education and communicating complex anatomical concepts, students will be expected to use audio and visual elements to create a presentation highlighting the key features of their respective specimens. Students will participate in self-reflection and peer feedback to think critically about their skills in anatomical research and pedagogy. The advancement of the relevant competences will facilitate professional development. The course has various types of assessments including a practical dissected specimen and accompanying presentation video, thoughtful reflection and peer feedback, and a summative research manuscript. Students will have the opportunity to develop a research question with their teams and complete research objectives in a comprehensive and thoughtful manner, mentored by the course instructors.

Learning Hours: 120 (36 Laboratory, 36 Group Learning, 48 Private Study)

Requirements: Prerequisite Level 4 or above and registration in a LISC Major or Specialization, or BHSc Program, and a minimum grade of A- in ANAT 391/3.0. Exclusion Maximum 12.0 units from: ANAT 499/12.0; ANAT 599/6.0; BCHM 421/6.0; BCHM 422/6.0; BCHM 594/3.0; BCHM 595/6.0; BCHM 596/12.0; CANC 499/12.0; DISC 591/3.0; DISC 592/3.0; DISC 593/3.0; DISC 594/3.0; DISC 598/6.0; DISC 599/6.0; EPID 499/12.0; EPID 595/6.0; HSCI 591/3.0; HSCI 592/3.0; HSCI 593/3.0; HSCI 594/3.0; HSCI 595/3.0; HSCI 598/6.0; HSCI 599/6.0; LISC 499/12.0*; LISC 594/3.0; LISC 595/6.0; LISC 596/12.0; LISC 598/9.0; MICR 499/12.0; NSCI 499/12.0; PATH 499/12.0; PATH 595/6.0; PHAR 499/12.0; PHGY 499/12.0; REPD 499/12.0.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Create a detailed prosected specimen with clearly evident anatomical features and generate a video teaching peers about the key anatomical structures.
2. Critically develop a thoughtful research question and investigate discrete objectives, communicating the research results in a written summative manuscript