COURSES OF INSTRUCTION

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 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 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 3nd 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. 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. 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. 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 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 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.

BCHM 218 Molecular Biology Units: 3.00
Molecules and macromolecules that participate in the replication and expression of genes. Current methods for exploring the structure, function, and manipulation of genetic material.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
LEARNING HOURS may vary. 120 (36L;12T;72P)
EQUIVALENCY MBIO 218/3.0.
Requirements: Minimum 2nd year (Level 2) standing and one of (BIOL 102/3.0; PHGY 170/3.0) and one of (CHEM 112/6.0; CHEM 114/3.0).
Course Equivalencies: BCHM218; MBIO218;MBIO318
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Explain how biomolecules (DNA, RNA, protein) function and interact to support life; (PLO 1, Assessment 1-5)
2. Apply research-based theories to solve problems related to biochemistry and molecular biology; (PLO 1, Assessment 1-5)
3. Note: PLO refers to the program learning outcome that each course learning outcome matches to.
4. Use computer-based multimedia to model and mimic the behaviour of biomolecules when conditions can be controlled in an in vitro-type experimental situation, and within the context of simulated cells; (PLO 2, LaunchPad simulations)

BCHM 270 Biochemical Basis of Health and Disease Units: 3.00
This course will introduce general biochemical concepts that will allow for an understanding of the biological and chemical principles underlying human physiology, health and disease. The course will provide self-paced learning and utilize evidence-based teaching principles, small group learning, peer-learning and guided-independent learning methodologies to provide an inclusive learning environment. Students will gain an enhanced appreciation of general applications of biochemistry as applied in day to day healthy life and during the disease states, diagnosis and clinical management of metabolic disorders.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
NOTE This introductory biochemistry online course is intended for prospective students in Nursing, Environmental Sciences, Engineering, Commerce, and general science programs.
NOTE May not be taken for credit towards the Plan requirements of the BCHM or LISC Specialization or Major Plans.
Learning Hours: 126 (66 Online Activity, 60 Private Study)
Requirements: Prerequisite Level 2 or above and (PHGY 170/3.0 or [BIOL 102/3.0 and BIOL 103/3.0]) or permission of the Instructor. Exclusion BCHM 102/3.0. One-Way Exclusion May not be taken with or after BCHM 310/9.0; BCHM 315/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Identify and describe the structures and functions of the major classes of biochemical molecules in the body and explain how they are synthesized and broken down in metabolism.
2. Explain the concepts of regulation by inhibition and activation at the enzyme level and extend these concepts to describe biochemical pathway regulation in the processes of metabolism at the level of the cell, organ, and body in health and disease.
3. Collaborate and communicate an understanding of the biochemical basis of an error in metabolism, including current and future diagnosis and treatments.
4. Integrate the roles of biochemical molecules and their associated processes to explain the consequences of a change in a particular biochemical process in health and disease.

BCHM 320 Applications of Synthetic Biology Units: 3.00
Applications of Synthetic Biology provides students with a comprehensive overview of designing and developing biological 'parts' (genes) to use for applications including but not limited to medical, artistry, and agricultural - with special emphasis regarding ethical use. Students will learn and can expand their entrepreneurial skills through website design and grant writing assessments. Moreover, students will be taught concepts such as DNA cloning methods, computational modelling of biological parts, and developing biological assays to assess function of a synthetic part. Successful completion of this course will prepare students to use components of synthetic biology/genetic engineering in their future endeavours.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Lecture, 48 Online Activity, 48 Private Study)
Requirements: Prerequisite Level 3 or above and (BCHM 102/3.0 or BCHM 218/3.0 or BCHM 270/3.0 or BIOL 205/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Compose a synthetic biological part to solve a real-world problem (including but not limited to medicine, artistry, and agricultural applications).
2. Design a methodology to clone, express, purify, and functionally assess a protein, starting with a gene.
3. Predict the properties of a biological part using computational modelling and computer aided visual tools.
4. Debate the usage and ethical considerations of synthetic biology in everyday life.
5. Integrate synthetic biology methodologies with the central dogma of molecular biology.
6. Communicate the necessity and requirements of a research project by scientific writing.

BCHM 370 Genetics and Genomics Units: 3.00
An introduction to the field of applied genomics for identifying genes underlying multi-factorial traits, diseases, and drug treatment outcomes. Basic principles of gene mapping studies will be covered in the context of recent advances in the field including statistical methods, and integrative analyses of biological datasets.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (48 Online Activity, 72 Private Study)
Requirements: Prerequisite (Level 3 or above and [BCHM 102/3.0 or BCHM 218/3.0 or BCHM 270/3.0 or BIOL 205/3.0]) or permission of the instructor. Exclusion BIOL 331/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Assimilate the evolution and advancements in the field of genetics and genomics to understand how they permitted the mapping of genes contributing to human diseases, traits, and drug response outcomes.
2. Apply the basic principles of research methodology to develop biological hypotheses pertaining to the role or contribution of genetic factors in human traits and identify methodologies for testing such hypotheses.
3. Reconcile the impact of genetic and genomics studies on the field to discuss the strengths and limitations of genetics studies and how this can affect progress in clinical outcome.

BCHM 482 Proteomics and Metabolomics Units: 3.00
This course will focus on the principles of proteomics and metabolomics and their application in the new systems biology `omics approach to scientific discovery. This course will emphasize both the methodologies used in proteomics and metabolomics, as well as their applications in both research, medical diagnostics, and disease management.
NOTE: Only offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 114 (36 Online Activity, 78 Private Study)
Requirements: Prerequisite Level 4 or above and registration in a BCHM/LISC Major or Specialization, or BHSc program and a cumulative GPA of 2.5 or higher and ([BCHM 218/3.0 and BCHM 270/3.0 and BCHM 370/3.0] or BCHM 310/9.0 or [BCHM 315/3.0 and BCHM 316/3.0]).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe what proteomics and metabolomics are, including how they differ from other emerging 'omics fields, to identify the significance they carry in scientific research. (PLO 8; Assessment 1–5)
2. Understand the basis of proteomic and metabolomic techniques and their limitations to be able to create scientific arguments as to whether or not they can be applied to a specific problem. (PLO 8; Assessment 1, 3–4)
3. Identify the types of information that proteomic and metabolomic techniques provide, and how these techniques can become more powerful when combined with complementary methods. (PLO 8; Assessment 1, 3–5)
4. Develop an appreciation of how online databases can be used as tools in the comprehensive analysis of the results gained from metabolomic and proteomic methods discussed. (PLO 8; Assessment 1, 3)
5. Gain a comprehensive understanding of how the proteomic and metabolomic methods can be used in both the study and diagnosis of disease states in order to apply them to their own research endeavors. (PLO 8; Assessment 1, 3–5)

CANC 380 Evolutionary Biology of Cancer Units: 3.00
This online course is designed to introduce students to cancer as an evolutionary problem. The material is unique in that it emphasizes the impact of the immune system in fighting cancer while at the same time shaping tumour cell evolution. Students will need to synthesize the impact of factors present in the tumour microenvironment.
NOTE Also offered online.
Learning Hours: 120 (72 Online Activity, 48 Private Study)
Requirements: Minimum 3rd year (Level 3) standing and one of (MICR 270/3.0; MICR 360/3.0; MICR 386/3.0) and one of (BCHM 270/3.0; BCHM 218/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Acquire a basic understanding of the evolutionary nature of cancer to recognize and evaluate the contribution of tumour heterogeneity and plasticity to cancer progression.
2. Analyze the tumour microenvironment to define its role in tumour invasion and its link to metastasis.
3. Characterize the role of immunity and inflammation in cancer and to define their contributions to cancer control or progression.
4. Recognize the impact of cancer on society and major milestones in cancer research to appreciate the successes of therapies and to assess the need for further development.
5. To apply an understanding of therapeutic selectivity to identify and evaluate the potential benefits and adverse effects of different therapeutic interventions in cancer.

CANC 440 Cancer Biology and Therapeutics Units: 3.00
A consideration of current knowledge and theories about the biology and treatment of cancer. The course will be presented in a small group format, with active student participation required.
NOTE Priority to students in the LISC Specialization Plan, CANC Sub-Plan.
Requirements: Prerequisite (Level 4 or above and registration in a BCHM/LISC Major or Specialization, or BHSc program and a minimum GPA of 3.0 in [BCHM 218/3.0 or BCHM 370/3.0]).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Understand the current state of knowledge of the biology, pathology and clinical outcomes of multiple forms of cancer, and relate how these factors determine established and experimental diagnostic and therapeutic approaches.
2. Discuss major issues related to the biology, pathology, diagnostics and therapeutics of each disease, in a small group student presentation format.
3. Synthesize knowledge you have acquired through the course to propose and justify your own novel approach to cancer diagnosis or treatment.

CRSS 453 Principles in Cardiorespiratory Science I Units: 3.00
An advanced organ systems approach to the physiological principles underlying cardiac function and oxygen delivery using lectures, seminars, and selected readings. Topics include mechanics and regulation of heart function as well as perturbations in cardiac function. Oxygen delivery and utilization will be examined at the levels of the lung, blood, and tissue. The responses to alterations in oxygen demand and/or supply will also be addressed. Obstructive sleep apnea will be used as a model of a pathological cardiorespiratory system interactions.
NOTE Priority given to students in the CRSS Sub-Plan.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of [(PHGY 215 and PHGY 216); PHGY 214/6.0; PHGY 212/6.0].
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Gain advanced understanding of cardiorespiratory systems by scrutinizing diseased states and major discoveries.
2. Build skills in presentation of complex topics and scientific writing.

CRSS 454 Cardiovascular Sciences Units: 3.00
A study of the physiology, pharmacology and anatomy of the cardiovascular system. Topics include integrative mechanisms of control and pharmacotherapy involved in short-term and long-term control of the circulation in health and disease.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 138 (18 Lecture, 10 Seminar, 10 Group Learning, 100 Private Study)
Requirements: Minimum 4th year (Level 4) standing and (registration in a LISC or BCHM MAJ or SSP Plan or BHSc program) and a GPA of 2.50. Exclusion LISC 454.
Course Equivalencies: CRSS454; LISC454
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Critically evaluate a scientific study to present the key findings and how they apply to the mechanisms of short term and long term control of the circulation.
2. Describe the time course of changes in the components that make up the baroreceptor reflex as a consequence of short term changes in blood pressure.
3. Explain the mechanistic basis and the time-course of alterations within the cardiovascular system (e.g. BP, heart rate, etc.) produced during and after a therapeutic intervention.
4. Identify a gap in knowledge regarding a lifestyle intervention that could potentially impact on blood pressure chronically in order to design a novel study to test a hypothesis.

CRSS 456 Molecular and Cellular Basis of Cardiovascular Disease Units: 3.00
An intensive course surveying the molecular and cellular mechanisms underlying the pathophysiology of the major cardiovascular diseases, and the current and emerging tolls used in their diagnosis and treatment. Alterations in signalling, metabolism, and structure and function will be discussed to present an integrative view of how cardiovascular diseases develop and progress.
NOTE Priority given to students in the CRSS Sub-Plan.
Requirements: Prerequisite (Level 4 and registration in a LISC Specialization or Major, or BHSc program and a minimum GPA of 2.5 and [PHGY 215/3.0 and PHGY 216/3.0]).
Offering Faculty: Faculty of Health Sciences

DDHT 459 Principles of Drug Discovery Units: 3.00
Advanced study of the early stage components involved in the complex process of drug development including target identification, design and synthesis, structure activity relationships, in vitro and in vivo efficacy determination, biochemical and biological optimization.
NOTE Priority given to students in the LISC Specialization Plan, DDHT Sub-Plan.
Learning Hours: 120 (12 Lecture, 24 Group Learning, 84 Private Study)
Requirements: Prerequisite PHAR 270/3.0 or PHAR 340 or PHAR 370. Recommended PHAR 416. Exclusion PHAR 480.
Offering Faculty: Faculty of Health Sciences

DDHT 460 Principles of Drug Development Units: 3.00
Advanced study of the component parts of the complex process of drug discovery and development and the assessment of human toxicology including drug delivery and formulation, directed toxicology studies, drug disposition, clinical trials, legal issues and regulatory approval.
NOTE Priority given to students in the LISC Specialization Plan, DDHT Sub-Plan.
Learning Hours: 120 (36 Lecture, 84 Private Study)
Requirements: Prerequisite PHAR 270/3.0 or PHAR 340 or PHAR 370. Recommended DDHT 459 and PHAR 416. Exclusion PHAR 480.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Develop solutions to drug discovery/development problems to discuss either orally or in writing solutions to these problems.
2. Critically analyze the social and economic implications of legislative decisions pertaining to the pharmaceutical industry to argue a particular side of this these decisions.
3. Develop and refine professional interpersonal communication skills.
4. Develop an understanding of the biologic, social, and economic constraints that influence drug development.

DISC 591 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 3.00
This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.
Learning Hours: 120 (36 Laboratory, 84 Group Learning)
Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. Build a research project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypotheses can be constructed that can be tested.
3. Refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

DISC 592 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 3.00

This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.

Learning Hours: 120 (36 Laboratory, 84 Group Learning)

Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. Build a research project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypotheses can be constructed that can be tested.
3. Refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

DISC 593 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 3.00

This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.

Learning Hours: 120 (36 Laboratory, 84 Group Learning)

Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. Build a research project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypotheses can be constructed that can be tested.
3. Refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

DISC 594 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 3.00

This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.

Learning Hours: 120 (36 Laboratory, 84 Group Learning)

Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. Build a research project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypotheses can be constructed that can be tested.
3. Refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

DISC 598 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 6.00

This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.

Learning Hours: 240 (72 Laboratory, 168 Group Learning)

Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. To build a project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypothesis can be constructed that you can test.
3. Hone and refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

DISC 599 Discovery Lab Research Projects for Team-Based Experiential Learning Units: 6.00
This course is designed to provide team-based experiential learning to undergraduate students over two semesters so that they have the competencies required to successfully contribute to interdisciplinary research that advances the biomedical and health-care sectors of our society. This course will provide opportunities for these teams of students to gain experience in various research disciplines, including biochemistry, microbiology, cell biology, physiology, anatomy, neuroscience, computational analyses of data sets, and knowledge translation. DISC students can expect to learn current methods to observe, dissect, manipulate, image, and measure the functions of organisms, organs, tissues, cells, and the molecular machinery within these biological media. Students will also gain experience with examining relevant literature, developing research questions, establishing and testing hypotheses, and designing a research plan with a budget and safety protocols for their team to execute. Each student team will work with a supervisor who will guide the team to design a group project that utilizes the infrastructure in the Discovery labs, and that adheres to the highest standards of professional behaviour.
Learning Hours: 240 (72 Laboratory, 168 Group Learning)
Requirements: Prerequisite Level 3 or above and registration in a BCHM, BHSc, BIOL, CHEM, KINE, or LISC Plan, and a cumulative GPA of 3.2 or higher, and acceptance of a supervisor. 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. Note BIOL, CHEM, and KINE research students will also be excluded if they are already enrolled in more than 6.0 units of research courses.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Develop discipline-specific skillsets and demonstrate an understanding of the philosophical and logistical aspects of team-based research.
2. To build a project from the ground up, following the same trajectory as established researchers in terms of using the literature to recognize gaps in our understanding, so that hypothesis can be constructed that you can test.
3. Hone and refine critical thinking skills, and analysis pipelines.
4. Analyze and present your data in a publication quality

GLPH 171 Social and Physical Determinants of Health and Disease Units: 3.00
Social and Physical Determinants of Health and Disease will use evidence-based practices to address the impact of social and environmental sources on health at both an individual and population level. Students will focus how the contexts of peoples' lives affect their health, methods for measuring contextual effects, and the role of medical systems in creating health. Students will gain skills to understand and evaluate scientific literature and become community advocates for health by researching and preparing a PSA as a cumulative assessment.
NOTE: Also offered online. Consult the Bachelor of Health Sciences program office.
Note:
Learning Hours: 120 (48 Online Activity, 72 Private Study)
Requirements: Exclusion HLTH 101/3.0; GPHY 339/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply methodological approaches to understand social and physical determinants of health.
2. Discuss health, wellness, and physical and social determinants of health.
3. Explain how intersectionality is linked to social and physical determinants of health, and describe the impact on health outcomes.
4. Explain the role of health initiatives in reducing health inequities.

GLPH 271 Global and Population Health Units: 3.00
In this course, the learning emphasis will be on global and population health, instead of the health of individuals. As a discipline, global and population health prioritizes partnerships and resource sharing, instead of unilateral relationships, as well as having an important focus on advocacy.
NOTE Also offered online.
Learning Hours: 114 (36 Online Activity, 78 Private Study)
Requirements: Minimum 2nd year (Level 2) standing or permission of the instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Recognize health as a human right in order to identify opportunities to demonstrate social responsibility and service.
2. Integrate social and physical determinants of health to assess the unique needs of special populations.
3. Draw on examples of successful interventions and best practices to assess the community's access to resources and design a well-informed health advocacy plan.
4. Identify and engage the appropriate stakeholders to develop consensus on the rationale and execution of a health advocacy plan.

GLPH 281 Racism and Health in Canada Units: 3.00
Students explore the impact of racism on the health of individuals and equity-deserving communities in Canada. A framework conceptualizing the social determinants of Indigenous Peoples' health, progressing from historical data to now are used. Reflection on biases, positionality, and skill development to support positive change are key components.

Learning Hours: 120 (36 Online Activity, 84 Private Study)
Requirements: Minimum 2nd year (Level 2) standing or permission of the instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze the strengths and potential pitfalls in creating public health policy aimed at mitigating racially-based health inequities, particularly as they relate to racialized communities in Canada.
2. Apply a process of reflexive inquiry to continuously adapt and improve upon their skills in cultural safety, and advocacy for health equity
3. Demonstrate the complexity and pervasiveness of racism as it relates to health, and develop potential personal and structural ways to begin to disrupt and dismantle these effects.
4. Identify the ways in which their individual social location influences their perspective and practice as health advocate and global citizen
5. Understand the importance of collaboration and empowerment of stakeholders, when advocating for positive change.

GLPH 385 Biohacking & Gerontechnology Units: 3.00
This course introduces and encourages the use of a global perspective to critically analyze technology developed to support/biohack human aging ranging from basic gerontechnologies that are currently in use to support older adults aging in place to cutting edge anti-aging technology.
NOTE: Also offered online
Learning Hours: 120 (72 Online Activity, 48 Private Study)
Requirements: Minimum 3rd year (Level 3) standing, or permission from the instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze the impact of biohacking and/or gerontechnology from the perspective of older adults, caregivers and/or medical professionals.
2. Build communication skills and engage in knowledge dissemination using blogging, streaming, and presentation skills as well as through the design of an infographic in order to become a better scholar and communicator.
3. Critically analyze anti-aging and gerontechnology tools and techniques in order to develop scholarship by evaluating uses, strengths and risks associated with gerontechnology and/or biohacking in both standard and novel situation
4. Examine consumer needs and critique the business/capitalist drivers behind the creation of biohacking and/or gerontechnology tools and techniques.
5. Identify ethical concerns associated with biohacking and gerontechnology to analyze how these ethical concerns impact older adults and whether they are different depending on geography, culture, or social determinants of health (SDH).
6. Identify the current and future biohacking and gerontechnology tools to understand how they might help or hinder the experience of aging globally.

GLPH 471 Advanced Global and Population Health Units: 3.00
Students will take knowledge gained from GLPH 271, and apply it in this course, which will focus on more advanced topics of population and global health, as well as provide experiential learning.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Requirements: Prerequisite Level 3 or above and (GLPH 271/3.0 or LISC 271/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Recognize health as a human right in order to identify and engage in opportunities to demonstrate social responsibility and service.
2. Integrate determinants of health with institutional barriers and enablers to assess the unique needs of special populations and affiliated organizations.
3. Draw on examples of successful interventions and best practices to assess the community and organization's access to resources and design a well-informed health advocacy plan.
4. Identify and engage the appropriate stakeholders to develop consensus on the rationale and execution of a health advocacy plan

GLPH 472 Special Populations: Neonatal to End-of-Life-Care Units: 3.00
In this online course, students will examine how variations in determinants of health can affect delivery of health care to special populations and shape health policy. Specific populations covered will include neonates, marginalized populations, those in intensive and end-of-life palliative care.
Requirements: Minimum 4th year (Level 4) standing and IDIS 373/3.0, or permission of instructor.
Offering Faculty: Faculty of Health Sciences

GLPH 482 Foundations of Humanitarian Health Emergencies Units: 3.00
This course will introduce students to the basic concepts, fundamental principles, and current events of humanitarian emergencies. From a health lens, humanitarian assessment, response, and evaluation will be discussed to provide a broad overview of international and domestic humanitarian aid. Health will be examined across a broad number of humanitarian programming topics to better understand the interconnected and complex contexts and planning structures. Guest speakers from large humanitarian organizations will contribute a real time, real world, aspect of learning and provide options for discourse in different contextual realities.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (36 Group Learning, 36 Online Activity, 48 Private Study)
Requirements: Prerequisite Level 4 or above. Exclusion HLTH 351/3.0; HLTH 397/3.0 (Topic Title: Health in Humanitarian Crises).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Using systems thinking, students will accurately identify the health risks and care needs of populations affected by different types of humanitarian emergencies
2. Analyze various potential human health interventions for different types of emergencies to maximize health benefits while mitigating risk
3. Demonstrate awareness of historical health inequities and adapt planned interventions to ensure optimal outcomes for vulnerable and marginalized populations

GLPH 485 Global Application of Health Informatics Units: 3.00
This fourth-year course will focus on the use of real electronic healthcare data. Students will learn about the history of data processing, the laws and regulations governing the use of healthcare data nationally and internationally, analysis techniques, and how health informatics systems can be used to drive and support health interventions.
Learning Hours: 120 (60 Online Activity, 60 Private Study)
Requirements: Min 4th Year Standing and one of (HSCI 190/3.0;STAM 200/3.0;BIOL 243/3.0; GPHY 247/3.0; KNPE 251/3.0; NURS 323/3.0; POLS 385/3.0; PSYC 202/3.0; STAT 263/3.0). Note: priority will be given to students registered in the Bachelor of Health Sciences pgm
Offering Faculty: Faculty of Health Sciences

GLPH 487 One World, One Health: The Global Link Between Human, Animal, and Environmental Health Units: 3.00
This course uses a socio-cultural lens to examine this multi-disciplinary field focusing on the intersection of human, animal and environmental health - locally and globally. Assessments involve the analysis of history, health policy and research frameworks, incorporating risk factors and diseases.

NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (36 Group Learning, 36 Online Activity, 48 Private Study)
Requirements: Prerequisite Level 4 or above.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze the impact of human activity including factory farming, wild caught meat (bush meat) on the environment as well as on the association with diseases including viruses
2. Apply One Health related concepts to explain how they might help or hinder the health of humans, non-human animals and the environment globally
3. Critically analyze One Health tools and techniques to evaluate uses, strengths and risks associated with One Health strategies in both standard and emerging situations
4. Examine special topics in One Health to determine their impact on humans, the environment and non-human animals globally, critically analyzing business/capitalist drivers behind the perpetuation of activities and industries that are detrimental to One Health goals.
5. Identify ethical concerns associated with the One Health framework including those involving the social determinants of health and inequities. Analyze and communicate how these ethical concerns impact human health and whether they are different depending on geography, culture, or social determinants of health (SDoH)

GLPH 488 Global Oncology: Cancer Care, Policy, Research, and Education Units: 3.00
GLPH 488 will focus on the challenges and opportunities of cancer care, education, research, and policy, especially in resource-limited settings. Students will integrate their learning in a research paper based on how cancer policy is at the intersection of all facets of cancer care, ultimately making a difference in outcomes of patients with cancer.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Lecture, 36 Group Learning, 60 Private Study)
Requirements: Prerequisite Level 4 or above.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze the implications for access with respect to how cancer drugs get approved and funded in the U.S, Canada and around the world
2. Appraise and then propose policy level solutions to address disparities in global cancer outcomes, including the role of organizations such as the WHO and other non-profit international organizations.
3. Critically appraise clinical trials and other types of research in oncology and assess the magnitude of clinical benefit of cancer drugs.
4. Discuss the economics of cancer drugs, and its relationship with global cancer disparities.
5. Produce both a publication style research-style as well as a commentary-style article related to global oncology and/or cancer policy.

GLPH 493 Global Health Practice Units: 3.00
This course will strengthen students' abilities to respond to a community's health needs through a practical service learning position with an approved local or international community health organization. Students will apply a reflective approach to community engagement in global health and consider the relationship between global health practice.
NOTE Registration must occur by permission through the Bachelor of Health Sciences Office.
132(60Pc;36O;36P)
Requirements: Minimum 4th year (Level 4) standing and GLPH 271/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Demonstrate how concepts of globalization, equity, and social and international development influence community health organizations' work to enhance their ability to enhance equitable relationships in global health service delivery
2. Describe their individual philosophy of practice in global health, including the broad values, knowledge, and approaches that they will use to identify, understand, and respond to a community's health needs
3. Develop and communicate a process of self-reflexivity to adapt and improve upon their global health practice through a combination of continuous independent reflection and regular communication with relevant stakeholders
4. Identify the ways in which their individual social location influences their perspectives to inform their practice as a global health researcher, service provider, activist or community organizer

HSCI 190 Introduction to Statistics for the Health Sciences Units: 3.00

This course is designed to introduce students to basic statistical concepts and techniques and provide them with practical skills for applying statistics to health sciences research. This includes data visualization, probability distributions, descriptive statistics, hypothesis testing, and parameter estimation. Specific techniques such as t-tests, correlations, analysis of variance, and regression analyses will also be covered. Throughout the course, real data will be used to guide learning. Students will also discuss and practice how to effectively interpret and report statistical findings within the health sciences. To be successful in the course assessments, students will need to progressively build their skills and apply the course knowledge to 1) select appropriate statistical tests based on the research question and data, 2) interpret findings from descriptive and statistical analyses, and 3) communicate the results effectively.

NOTE Also offered online; consult the Bachelor of Health Sciences program office (Learning Hours may vary).

Requirements: Prerequisite Registration in a BHSc Program. Exclusion BIOL 243/3.0; CHEE 209/3.5; COMM 162/3.0; ECON 250/3.0; GPHY 247/3.0; KNPE 251/3.0; NURS 323/3.0; POLS 285/3.0; POLS 385/3.0*; PSYC 202/3.0; SOCY 211/3.0; STAM 200/3.0; STAT 263/3.0. One-Way Exclusion May not be taken with or after STAT 269/3.0.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Describe data using appropriate descriptive statistics and data visualization techniques to effectively communicate results of a study.
2. Explain how study design can inform or limit statistical testing and data interpretation.
3. Explain the assumptions of the statistical tests covered in this course and use that information to select the most appropriate statistical test for a given research question and data set.
4. Interpret findings from the statistical analyses covered in this course and communicate the implications of the results effectively.

HSCI 270 Fundamentals of Health Research Methodology Units: 3.00

HSCI 270, Fundamentals of Health Research Methodology will introduce fundamentals of health-related research methods with a focus on developing critical reasoning skills. Using examples from a wide range of health-related research topics, students will gain familiarity and skills to assess primary literature at a basic level. Throughout the course, students will assess various aspects of both qualitative and quantitative research such as research questions, study rationales, study design, replicability/trustworthiness of research reports, and ethics for research involving human subjects.

Note: Also offered online

Note: Learning Hours may vary

Requirements: Minimum 2nd year (Level 2) standing and one of (HSCI 190;STAT 263;BIOL 243;STAM 200;CHEE 209; ECON 250;GPHY 247;KNPE 251;NURS 323;POLS 385;PSYC 202;SOCY 211;STAT 267;STAT 367;COMM 162). Exclusion SOCY 210;GPHY 240; HLTH 252; PSYC 203; EPID 301; HLTH 323

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Apply basic concepts surrounding the design, conduct, and interpretation of observational studies that are commonly used in the field of epidemiology by conducting a critical appraisal of an observational study.
2. Develop compelling, evidence-based rationales for research studies based upon existing evidence and communicate logical and creative arguments in support of research ideas and associated study designs.
3. Discuss the origins of research questions in human health and disease, and best practices for articulating such questions in the health sciences.
4. Evaluate experimental concepts, design, and basic analysis in order complete a critical appraisal of a clinical trial.
5. Understand and apply key concepts and practices of qualitative health research by conducting a critical appraisal of a qualitative study.

HSCI 301 Queen's Undergraduate Internship Program Part I Units: 1.50
Part I of a 12-16 month, professionally supervised, career-related position designed to offer students the opportunity to learn about current advances, practices and technologies in workplaces including business, industry, government, and community settings. Students will develop a range of workplace skills, learn about organizational culture, and expand their knowledge of career options.
Requirements: Minimum 2nd year (Level 2) standing and completion of the Queen's Undergraduate Internship Program pre-departure workshop.
Offering Faculty: Faculty of Health Sciences

HSCI 302 Queen's Undergraduate Internship Program Part II Units: 1.50
Part II of a 12-16 month, professionally supervised, career-related position designed to offer students the opportunity to learn about current advances, practices and technologies in workplaces including business, industry, government, and community settings. Students will develop a range of workplace skills, learn about organizational culture, and expand their knowledge of career options.
Requirements: Minimum 2nd year (Level 2) standing, HSCI 301, and completion of the Queen¿s Undergraduate Internship Program pre-departure workshop.
Offering Faculty: Faculty of Health Sciences

HSCI 303 Queen's Undergraduate Internship Program (12-month) Part III Units: 3.00
Part III of a 12 month, professionally supervised, career-related position designed to offer students the opportunity to learn about current advances, practices and technologies in workplaces including business, industry, government, and community settings. Students will develop a range of workplace skills, learn about organizational culture, and expand their knowledge of career options.
Requirements: Minimum 2nd year (Level 2) standing, HSCI 301/1.5, HSCI 302/1.5, and completion of the Queen's Undergraduate Internship Program pre-departure workshop.
Offering Faculty: Faculty of Health Sciences

HSCI 304 Queen's Undergraduate Internship Program (16-month) Part III Units: 1.50
Part III of a 16-month, professionally supervised, career-related position designed to offer students the opportunity to learn about current advances, practices and technologies in workplaces including business, industry, government, and community settings. Students will develop a range of workplace skills, learn about organizational culture, and expand their knowledge of career options.
Requirements: Minimum 2nd year (Level 2) standing, HSCI 301/1.5, HSCI 302/1.5, and completion of the Queen's Undergraduate Internship Program pre-departure workshop.
Offering Faculty: Faculty of Health Sciences

HSCI 305 Queen's Undergraduate Internship Program (16-month) Part IV Units: 1.50
Part IV of a 16-month, professionally supervised, career-related position designed to offer students the opportunity to learn about current advances, practices and technologies in workplaces including business, industry, government, and community settings. Students will develop a range of workplace skills, learn about organizational culture, and expand their knowledge of career options.
Requirements: Minimum 2nd year (Level 2) standing, HSCI 301/1.5, HSCI 302/1.5, HSCI 304/1.5, and completion of the Queen's Undergraduate Internship Program pre-departure workshop.
Offering Faculty: Faculty of Health Sciences

HSCI 383 Advanced Research Methodologies Units: 3.00
Students will have the opportunity to develop and apply a mixed methods design for research. The course instruction will assist students as they navigate processes of literature review, question development, experimental design, proposed approaches to data analyses (both quantitative and qualitative) and proposed methods of knowledge mobilization.
Requirements: Minimum 3rd year (Level 3) standing and one of (HSCI 270/3.0; BMED 270/3.0; EPID 301/3.0; HLTH 252/3.0; PSYC 203/3.0; SOCY 210/3.0) or permission of the Instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Communicate methodological paradigms, approaches, and tests to justify and explain alignment with research questions.
2. Design and critique experimental, quasi-experimental, and qualitative research protocols to ensure data is valid and reliable.
3. Establish appropriate quantitative and qualitative data collection and analyses to provide sufficient evidence to effectively respond to research questions.
4. Review and interpret literature within one or more Bachelor of Science (Honours) in Health Sciences track(s) to establish research questions relevant to human wellness.

HSCI 483 Applied Qualitative Methods for Health Research Units: 3.00
In this course students will explore multiple qualitative methodologies and methods used to collect and analyze non-numeric behaviours, experiences, and perspectives. This course provides an opportunity to enhance and apply qualitative research skills. Students will design and initiate a qualitative research project on a topical health issue.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Group Learning, 48 Online Activity, 48 Private Study)
Requirements: Prerequisite Level 3 or above and HSCI 383/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply qualitative research methodologies in practice to recognize benefits and limitations of various approaches.
2. Compare methodological approaches to qualitative health research to align appropriate methodologies and methods to research questions.
3. Explain ethical principles, power dynamics and relationality in qualitative inquiry to inform reflexivity and positionality in their own research.
4. Present proposals and findings of qualitative research.
5. Utilize qualitative data analysis software to analyze qualitative data and apply methods of triangulation.

HSCI 591 Health Sciences Research: Design and Methods Units: 3.00
This course will allow students to carry out components of a research project in the Health Sciences. Students will gain experience searching relevant literature, developing research questions, establishing and testing hypotheses (where appropriate), designing a research plan and methods. (Note: The primary difference between HSCI 591 (120 hours) and HSCI 598 (240 hours) is the number of hours the student is expected to spend on the project, which corresponds to a lesser scope of the research project in HSCI 591).
Requirements: Minimum 3rd year (Level 3) standing and registration in the BHSc program. Exclusion 12.0 units from 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.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Conduct a literature search in the health sciences to develop and rationalize research questions, hypothesis, and/or a phenomenon
2. Develop a research plan to address and/or test a research question, hypothesis, and/or phenomenon
3. ustify and defend the research question, hypothesis, phenomenon, and/or experimental plan (as appropriate to the specific project)
4. Demonstrate skills in research methods related to the proposed research project

HSCI 592 Health Sciences Research: Design and Methods Units: 3.00
This course will allow students to carry out a research project in the Health Sciences. Students will gain experience searching relevant literature, developing research questions/ hypotheses, and designing a research plan and methods.
Requirements: Minimum 3rd year (Level 3) standing and registration in the BHSc program. Exclusion 12.0 units from 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.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Conduct a literature search in the health sciences to develop and rationalize research questions, hypothesis, and/or a phenomenon
2. Develop a research plan to address and/or test a research question, hypothesis, and/or phenomenon
3. Justify and defend the research question, hypothesis, phenomenon, and experimental plan
4. Demonstrate skills in research methods to be used in the research project

HSCI 593 Health Sciences Research: Data Collection and Interpretation Units: 3.00
This course will allow students to carry out a research project in the Health Sciences. Meant to follow HSCI 592/598, students will gain experience answering research questions and/or testing hypotheses using a research plan and methods developed during the initial course, with an emphasis on the development of research skills and practice interpreting data.
Exclusion: no more than 12 units from HSCI 591,592,593,594,595,598,599.
Requirements: Min 3rd or 4th year HSC prog
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Demonstrate skill in research methods enabling the collection of data that addresses their research question and/or tests their hypothesis
2. Analyze and interpret data in order to describe the impact of their research on the field of study
3. Display an understanding of their research methods and results to propose future studies to further the field of research

HSCI 594 Health Sciences Research: Data Collection and Interpretation Units: 3.00
"This course will allow students to carry out components of a research project in the Health Sciences. Meant to follow HSCI 591 and 592 or 598, students will gain experience answering research questions, establishing and testing hypotheses (where applicable) using a research plan and methods developed during the initial course, with an emphasis on the development of research skills and practice interpreting data.
(Note: The primary difference between HSCI 594 (120 hours) and HSCI 599 (240 hours) is the number of hours the student is expected to spend on the project, which corresponds to an expected increase in the scope of the research project.)"
Requirements: Min yr 3, 1 of HSCI591,593,598
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Demonstrate skill in research methods enabling the collection of data that addresses their research question and/or tests their hypothesis (as appropriate to the specific project)
2. Analyze and interpret data in order to describe the impact of their research on the field of study
3. Display an understanding of their research methods and results to propose future studies to further the field of research

HSCI 595 Health Sciences Research: Data Collection and Interpretation Units: 3.00
This course will allow students to carry out components of a research project in the Health Sciences. Meant to follow HSCI 591/3.0, HSCI 593/3.0, and HSCI 594/3.0 students will gain experience answering research questions, establishing and testing hypotheses (where applicable) using a research plan and methods developed during the initial course, with an emphasis on the development of research skills and practice interpreting data.
(Note: The primary difference between HSCI 595 (120 hours) and HSCI 599 (240 hours) is the number of hours the student is expected to spend on the project, which corresponds to an expected increase in the scope of the research project.)
Requirements: min yr 3, 1 of HSCI591,593,594
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Demonstrate skill in research methods enabling the collection of data that addresses their research question and/or tests their hypothesis (as appropriate to the specific project)
2. Analyze and interpret data in order to describe the impact of their research on the field of study
3. Display an understanding of their research methods and results to propose future studies to further the field of research

HSCI 598 Advanced Health Sciences Research: Design and Methods Units: 6.00
This course will allow students to carry out an in-depth research project in the Health Sciences. Students will gain experience searching relevant literature, developing research questions/hypotheses, and designing a research plan and methods, as well as developing preliminary skills in using the methods.
Exclusion: no more than 12 units from
HSCI 591,592,593,594,595,598,599.
Requirements: Min 4th year HSC prog
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Conduct an in-depth literature search in the health sciences to develop and rationalize a specific research questions, hypothesis, and/or phenomenon
2. Demonstrate skill in research methods to be used in the research project
3. Develop a detailed research plan in order to appropriately address and/or test a research question, hypothesis, and/or phenomenon
4. Justify and defend the research question, hypothesis, objectives, methods and experimental plan

HSCI 599 Advanced Health Sciences Research: Data Collection and Analysis Units: 6.00
This course will allow students to carry out an in-depth research project in the Health Sciences. Meant to follow HSCI 592 or 598, students will gain experience answering research questions and/or testing hypotheses using a research plan and methods developed during the initial course, with an emphasis on the development of research skills and practice interpreting data.
Exclusion: no more than 12 units from
HSCI 591,592,593,594,595,598,599.
Requirements: Minimum 4th year (level 4) standing, registration in the BHSc Program, one of (HSCI 592/3.0; HSCI 598/6.0)
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze and interpret data to answer the research question or support/reject the hypothesis/null hypothesis.
2. Assess peer-reviewed literature, recognizing gaps in knowledge to defend the research questions/hypotheses and articulate how the research could advance the field.
3. Develop research methods to produce and/or collect data that addresses research question(s) and/or test hypotheses
4. Interpret and attribute methods and results to propose future studies to further the field of research

IDIS 173 The History and Philosophy of Health and Healthcare Units: 3.00
Multidisciplinary course organized around five major fields of scientific endeavour: anatomy, physiology, pathology, pharmacology, and population and global health.
LEARNING HOURS may vary 120(48O;72P)
Requirements: Exclusion PHIL 201/3.0 Equivalency BMED 173/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe and analyze important people, events and trends that have influenced the development of five core subjects in the BHSc program (anatomy, physiology, pathology, pharmacology, population and global health) in order to understand what role technological developments and social values play in the construction and application of science.
2. Identify relevant sources and carry out research using traditional and web-based resources
3. Understand different perspectives on controversial issues in contemporary health science fields in order to critically assess them.

IDIS 199 The Science of Mental Health, Well-being, & Resiliency Units: 3.00
A course designed for undergraduate students across all programs. Topics include an overview of conceptual approaches to defining and measuring mental health, mental health problems and mental illness, the impact of sleep habits, distress tolerance and self-regulation on well-being, and an introduction to effective coping choices.
LEARNING HOURS 120(48O;72P)
Requirements: Prerequisite None. Exclusion HLTH 102.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Consolidate evidence across disciplines to describe the determinants of mental health, well-being, and resiliency in emergent adults, as well as factors associated with a successful transition to university and the realization of personal goals.
2. Describe common stressors and risks encountered by emergent adults and the implications of mental health, well-being, and resiliency on success.
3. Explain the early signs and symptoms of common mental health concerns, preventative strategies, available resources, and potential barriers to accessing supports in emergent adult populations.
4. Reflect on the information covered in this course and how the information can be used to implement healthy choices that support well-being and resilience in students' own lives.

IDIS 280 Interprofessional Approaches in Healthcare Units: 3.00
This course aims to prepare learners with the knowledge and capabilities for working within complex interprofessional environments common in the healthcare sector. The course introduces the basics of collaborative practice in healthcare and the related six interprofessional competencies.
NOTE Only offered online. Consult Bachelor of Health Sciences program office.
Learning Hours: 120 (96 Online Activity, 24 Private Study)
Requirements: Minimum 2nd year (Level 2) standing or permission of the Instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Define collaborative practice and explain the importance of collaborative client-centred practices from the perspectives of safe, quality, and effective care.
2. Describe and define the six Canadian competencies associated with effective interprofessional collaborative practice in order to recognize and apply them in team-based interactions.
3. Describe the basic components of effective teams and stages of team development to contribute to effective team development.
4. Explain the relevance of good communication skills, competent conflict strategies, and of creating and supporting a culture of compassion in productive teamwork for successful client interactions and outcomes. Apply these in team-based learning situations.
5. Identify your personal areas of strength and limitations, based on self-reflection and peer-feedback with a view to developing plans for future professional development.

IDIS 373 Health Ethics, Law, and Policy Units: 3.00
An introduction to ethical, legal and regulatory requirements for people working in the health professions.
LEARNING HOURS may vary 120(48O;72P)
Requirements: Minimum 3rd year (Level 3) standing.
Equivalency BMED 373.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Access, analyze, and consolidate relevant health legislation and case law, professional codes of ethics and practice standards, institutional policies, and scholarship in order to facilitate decision-making
2. Build on skills developed in IDIS 173 in order to demonstrate increased awareness and understanding of the ethical and legal dimensions of healthcare provision and administration
3. Use critical thinking skills, tools, and resources in order to clarify what issues are at stake; bring together stakeholder perspectives, evidence, and other contextual features; generate a wide range of options in alignment with law, values, and duties; and make reasoned decisions about what is right, just, or fair in particular situations

IDIS 473 Designing Life After Queen's Units: 3.00
This upper-year course uses design thinking to help students plan their life and career after university. The course places special emphasis on exploring how education and career choices can contribute to positive social change. It also addresses the realities of engaging with contemporary workplaces.
NOTE Due to the personalized nature of the assignments, this course uses a pass/fail grading system.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (60 Online Activity, 60 Private Study)
Requirements: Prerequisite Level 3 or above.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Articulate coherent philosophies of life and work to guide their future education and career choices.
2. Understand the impact of sociocultural factors on their professional identity and career.
3. Use design theory and a framework to evaluate options and create plans to achieve their educational and career goals.
4. Employ career development methods to position their education, work experience and background in an educational setting or job field of their choice.
5. Present a post-graduation education or career vision and next steps for moving forward.

IDIS 480 Advanced Interprofessional Approaches in Healthcare Units: 3.00
This course, the second of two, presents philosophies and methodologies crucial for safe and excellent teamwork in healthcare. It aims to prepare learners with additional knowledge and advanced capabilities to work within complex interprofessional environments, common in diverse workplaces, and indispensable in the healthcare sector. These capabilities, referred to as the `interprofessional competencies' in The National Interprofessional Competency Framework 1 were introduced previously in IDIS 280. They will be expanded and applied in greater detail for the advanced learner. In-depth knowledge and complex skill development will be examined in the following areas: theoretical and global frameworks for collaborative practice and health equity; intercultural communication; teamwork processes; communication tools for safe work in healthcare; philosophies of health, wellness and well-being; and collaborative leadership. Models for effective healthcare teams, via the utilization of knowledge and skills from all stakeholders including patient/client, family, and community partnerships, will be introduced on a community and system levels and applied in authentic scenarios. The course is designed as a series of modules that will address these advanced collaborative teamwork competencies. A significant portion of the course assessments will be application-based, leading students to apply the principles of team-based learning and collaborative practice in group situations.
Learning Hours: 120 (72 Online Activity, 48 Private Study)
Requirements: Minimum 4th year (Level 4) standing and IDIS 280/3.0 or permission from the instructor.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Define collaborative practice from the perspective of international frameworks and describe the importance of collaborative patient-centred practice for safe, quality, and effective care. (PLO 6, 7; Assignments 2-5)
2. Explain intercultural communication and recognize how to apply principles of communication that respect varied cultures in the workplace. (PLO 6; Assignments 1-5)
3. Identify teamwork communication tools used in healthcare contexts and principles for facilitating challenging communications, such as with debriefing and disclosure of adverse patient events. (PLO 6, 7; Assignments 1-5)
4. Summarize the principles of collaborative leadership and demonstrate leadership within a team environment. (PLO 6; Assignments 1-5)
5. Summarize the principles of health equity associated with the determinants of health. Apply these, in collaboration with peer learners, to teamwork case scenarios at organizational and community levels. (PLO 6,

IDIS 483 Applied Health Ethics: Clinical, Organizational, and Research Perspectives Units: 3.00
Individual and collaborative work prepares students to navigate the complex ethical challenges they will face as they enter diverse professional roles in the health system. Course assessment will be based on a combination of active engagement in course discussion, performance in case-based active learning opportunities, and short written case analyses.
Learning Hours: 120 (24 Lecture, 36 Group Learning, 60 Private Study)
Requirements: Prerequisite (Level 4 or above and IDIS 373/3.0) or permission of the instructor. Note Priority access will be given to students registered in the Bachelor of Health Sciences program.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply knowledge and skills from course content to generate and defend responses to ethically challenging cases.
2. Critically analyze and discuss ways in which contextual health-system factors interact with professional healthcare roles to generate a variety of ethical issues in health care.
3. Identify and describe key concepts and principles in health ethics, as well as contextual health-system factors relevant to contemporary clinical, organizational, and research ethics in Canada.

LISC 300 The Process of Discovery in the Biomedical Sciences Units: 3.00
Teams of students will identify the critical questions that must be answered to resolve major controversies or gaps of knowledge that impede the application of fundamental principles in the Life Sciences to health care. The end product will be a written report and public presentation that is accessible to a wide audience.
NOTE Restricted to students registered in Level 3 or above in a (LISC Specialization or Major Plan or BCHM Specialization or Major Plan or BIOL Plan or PSYC Plan).
NOTE Limited enrollment available to BIOL and PSYC students.
Learning Hours: 126 (6 Lecture, 6 Seminar, 33 Group Learning, 33 Online Activity, 48 Private Study)
Requirements: Prerequisite Minimum 3rd year (Level 3) standing and registration in one of (LISC Honours Plan; BCHM Honours Plan; BHSc Program; BIOL Plan; PSYC Plan).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Search for, identify, and critically assess sound scientific manuscripts and sources.
2. Work effectively in groups to integrate and present data from various scientific sources.
3. Produce written works that synthesize information they have gathered.
4. Present their findings in both lay and scientific language in either a scientific poster or oral presentation format.

LISC 387 Sex Differences in Health and Disease Units: 3.00
This course will focus on the role of sex/gender related differences in etiology, pathogenesis and immune responses of human diseases. Conventional and advanced tools in diagnosis and treatment of diseases affecting men and women.
Learning Hours: 120 (24 Lecture, 12 Seminar, 36 Group Learning, 48 Private Study)
Requirements: Prerequisite (Level 3 and registration in a LISC/BCHM Major or Specialization Plan or BHSC program) and (a GPA of 2.5) and one of (MICR 270/3.0; MICR 360/3.0; MICR 386/3.0) and BCHM 218/3.0. Exclusion REPD 387/3.0*.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Students will have the basic understanding of immunological and hormonal mechanisms that integrate and impart sex differences in diseases with an emphasis on those that associate with the urogenital tract.
2. Students will gain a basic knowledge of recent advances in diagnosis and treatment of diseases exhibiting sex differences.
3. Students will be able to apply the concepts acquired in critical assessment and identification of knowledge gaps in immunologically driven sex differences in disease pathology and outcomes.

LISC 390 Integrated Life Science Laboratory I Units: 3.00
Students will learn a number of different laboratory techniques, developing skills in scientific methodology, data acquisition, and interpretation. Students will also attain skills in critical thinking and hypothesis development, as well as gain experience in writing a laboratory report, and participating in research presentations.
NOTE Priority will be given to students registered in a LISC Specialization Plan.
Requirements: Prerequisite (PHGY 210/6.0 or PHGY 214/6.0 or [PHGY 215 and PHGY 216]) and (LISC 391 or PHAR 230 or PHAR 340 or PHAR 370 [formerly PHAR 270/3.0]). Exclusion BMED 384.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply qualitative and quantitative research methodologies to test hypotheses, generate data, and interpret results spanning the fields of biochemistry, anatomy, physiology, immunology, pharmacology, and microbiology.
2. Conduct, analyze, and interpret their own research, and discuss the significance of the findings within the context of respective fields.
3. Justify and support an experimental plan by searching through and scrutinizing the available scientific literature of the topic in question.
4. Navigate human anatomical specimens, identifying different tissues, organs and systems, while discussing links between their structure and function.
5. Perform laboratory experiments using appropriate technique, with emphasis on efficiency and multitasking.

LISC 391 Integrated Life Sciences Laboratory Units: 3.00
An intermediate laboratory course on the Physiology and Pharmacology of Cardiorespiratory Sciences and Neuroscience. Students develop skills to acquire and evaluate data and methods. Critical thinking skills are used for the development of arguments, assumptions, and information required to evaluate concepts and hypotheses.
NOTE Priority will be given to students registered in a LISC Specialization Plan.
Learning Hours: 108 (36 Laboratory, 36 Online Activity, 36 Private Study)
Requirements: Prerequisite PHGY 210/6.0 or PHGY 214/6.0 or (PHGY 215 and PHGY 216). Exclusion BMED 384.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply understanding of physiology and pharmacology principles to an experimental laboratory setting of neuroscience and cardiorespiratory physiology.
2. Develop qualitative and quantitative research methodologies including data acquisition and analysis to effectively test a hypothesis, generate data, and interpret results using appropriate statistics, and data analysis including graphing and curve fitting.
3. Work collaboratively in a group to effectively design, execute, analyze, and present experimental data.
4. Discuss the significance of their findings in the form of informal reports, formal laboratory report in a defined format, scientific poster, and oral presentation.

LISC 400 Neuro-Immune Interactions in Health and Disease Units: 3.00
This course is designed to advance critical thinking skills, as well as oral and written communication skills, via an inquiry-based approach in neuroimmunology. Teams of students identify the critical cellular and molecular processes regulating neuro-immune interactions in health and disease.
Learning Hours: 120 (24 Group Learning, 36 Individual Instruction, 36 Online Activity, 24 Private Study)
Requirements: Prerequisite Minimum 3rd year (Level 3) standing, registration in a LISC/BCHM/BHSc Major or SSP, a GPA of 2.5, and one of ([PHGY 290/3.0 and MICR 270/3.0]; LISC 300/3.0; NSCI 323/3.0; NSCI 324/3.0; MICR 360/3.0; MICR 386/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Accumulate relevant scientific evidence through scholarly review of the neuroimmunology literature and critically evaluate the content as it relates to the proposed topic.
2. Identify gaps in knowledge and/or paradoxes and/or obstacles in the collected neuroimmunology literature with regard to limitations in resolving fundamental questions in the specific area under study.
3. Communicate (verbal and written) their knowledge, insights and a conceptual framework to their peers and a lay audience; providing justification/rationale that investigation of the critical issues they have identified provide a constructive strategy to advance the field of neuroimmunology.
4. Capitalize on the power of group dynamics, to support and advocate for team members, and manage diverse opinions and personalities.
5. Provide thoughtful, logical and innovative questions to the projects proposed by other groups.

LISC 426 Current Concepts in Sensorimotor Neuroscience Units: 3.00
A multi-disciplinary course exploring advanced concepts of sensorimotor integration from a systems neuroscience perspective. Topics include the neural basis of perception, action selection, reinforcement learning, and motor control. Students will learn to critically evaluate scientific literature and present these concepts to classmates.
Requirements: Prerequisite Level 4 or above and registration in the LISC Major or Specialization Plan, or BHSc Program, and a cumulative GPA of 2.50 or higher and (NSCI 323/3.0 or NSCI 324/3.0).
Offering Faculty: Faculty of Health Sciences

MICR 270 Infection, Immunity and Inflammation Units: 3.00
This course focuses on 1) the overall organization of the immune system, 2) the role of the immune system in combating diseases caused by common pathogens as well as adverse reactions of the immune system and 3) application of the basic knowledge of immunology to the field of infectious disease prevention and control by vaccines and treatment of cancer. The unique features of this course lie in its overall structure and delivery that will prepare the student for further in-depth learning in the field of immunology.
NOTE This online course in infection and immunity is designed for students from various biological sciences and allied health backgrounds at all levels of post-secondary education and is recommended as a foundation course for students pursuing a life sciences career.
NOTE Also 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: 114 (36 Online Activity, 78 Private Study)
Requirements: Minimum 2nd year (Level 2) standing and one of (BIOL 102/3.0; MICR 121/3.0; PHGY 170/3.0). One-way Exclusion May not be taken with or after MICR 360/3.0; MICR 386/3.0; BMED 386.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe the beneficial and detrimental interactions of the innate and adaptive branches of the human immune system.
2. Describe the organization of the immune system and how it functions.
3. Describe the unique features of human defense mechanisms against microbial agents.
4. Understand how the basic knowledge of immunology can be applied and translated to the development of immunological techniques, vaccines, and cancer immunotherapies.

MICR 271 Introduction to Microbiology Units: 3.00
An introduction to the biology of microbes, including both pathogenic & beneficial bacteria, viruses, fungi, & protozoa. This overview of the biological features of these microorganisms will highlight these organisms¿ roles in the environment & in human health contributing to infectious diseases vs. maintaining healthy microbiomes.
NOTE Only offered online. Consult the Bachelor of Health Sciences Program office.
Learning Hours: 120 (60 Online Activity, 60 Private Study)
Requirements: Minimum 2nd year (Level 2) standing and one of (PHGY 170/3.0; BIOL 102/3.0). Exclusion MICR 221/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Analyze information pertaining to a specific organism to evaluate the impact of microbial replication, gene expression and antibiotic resistance of the microorganism in health, disease or the environment.
2. Collaboratively demonstrate a working knowledge of microbe characteristics that relate to their survival by working effectively with peers.
3. Employ a basic understanding of the biological features of bacteria, viruses, and eukaryotic microbes to transition to higher level microbiology courses.
4. Employ effective peer review in a small group setting in order to collaboratively formulate predictions of the success or failure of designed superbugs.

MICR 290 Antibiotic Resistance Lab Units: 3.00
This immersive laboratory course is designed to give students the opportunity to apply important microbiological and biochemical research techniques to the study of antibiotic resistance. Students work in small groups on a semester-long project, developing valuable lab skills that will support them with future research
opportunities.
Learning Hours: 120 (36 Laboratory, 48 Online Activity, 36 Private Study)
Requirements: Prerequisite Level 2 or above and registration in a BCHM or LISC Plan, or BHSc Program, and (BIOL 102/3.0 or PHGY 170/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Recognize hazards in a research environment in order to employ safe laboratory practices.
2. Summarize observations and research data in a lab notebook in order to communicate their results in a written format.
3. Explain how common biochemical and microbiological research techniques work, and evaluate when a particular technique should be applied.
4. Apply basic research techniques to answer scientific questions.
5. Interpret and evaluate experimental results to present their findings as a written report.
6. Evaluate the literature on antibiotic resistance to explain topics in this area to a scientific audience.

MICR 320 Microbes in Health and Disease Units: 3.00
This course will focus on the roles of microbes in health (human microbiome) and disease (pathogens). The molecular mechanisms of bacterial/viral virulence and the host response will be examined in order to develop an in depth understanding of the etiology of infectious diseases and the benefits derived from the human microbiome. Consult the Bachelor of Health Sciences program office
NOTE Also offered online. Learning Hours may vary.
Requirements: Minimum 3rd year (Level 3) standing and one of (MICR 221/3.0; MICR 271/3.0; MICR 229/3.0) and one of (MICR 360/3.0; MICR 386/3.0; BMED 386/3.0). Exclusion MICR 382/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe and apply knowledge of how microbes interact with the human host in relation to health (human microbiome) and disease (microbial pathogens). Organize & assess information from various sources to critically and appropriately problem solve.
2. Integrate the information taught in the course to provide a broad-based understanding of the global impact of microbes on health and disease. Reflect upon and track how accumulated knowledge is influencing perception of human health and infectious disease.
3. Reflect upon and document learning styles and strategies best suited to optimize depth and breadth of learning.
4. Work collaboratively in a small group setting to apply accumulated knowledge in critical evaluation of the factors that contribute to the etiology of infectious diseases.

MICR 386 Fundamentals of Immunology in Health and Disease Units: 3.00
Integrates the key principles of immunology to facilitate learning of immunology as it relates to human health and disease. This course offers real-life case studies, problems encountered and solutions applied, immunology virtual laboratory simulation, and extensive coverage of the basic science underlying each topic in the module.
Also offered online.
LEARNING HOURS may vary:120(48O;72P)
Requirements: Minimum 3rd year (Level 3) standing and one of (BCHM 218/3.0; BCHM 270/3.0), and one of (MICR 270/3.0; MICR 271/3.0; MICR 221/3.0). Exclusion MICR 360/BMED 877
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Advocate for ethical issues in the immunological approach to health and life sciences by effectively researching major issues at the forefront of the discipline
2. Assess immunology resources critically (e.g. videos, virtual lab, and clinical images) and use precise written responses to present the work to both a science literate and general audience
3. Dissect a problem into its key features by thinking in an integrated manner and interpret immunological data from a virtual lab to identify consistent and inconsistent components
4. Explain the fundamentals of immunology and describe key principles of the immune system, mechanisms of immune reactions, aspects of antibody formation, and cell-mediated immunity in health and disease

MICR 451 Viral Pathogenesis Units: 3.00
This molecular virology course covers viral replication strategies and virus-host interactions, with an emphasis on mechanisms of viral pathogenesis, focusing on human pathogenic viruses such as coronaviruses, hepatitis viruses, HIV, and herpesviruses. Tutorials will be in journal club format with group discussion and analysis of recent literature.
Learning Hours: 120 (24 Lecture, 12 Tutorial, 84 Private Study)
Requirements: Prerequisite Level 3 or above and registration in the LISC Major or Specialization Plan, or BHSc program and a minimum CGPA of 2.50 and (MICR 221/3.0 or MICR 271/3.0) and (BCHM 218/3.0 or BIOL 330/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Appreciate how viruses impact health and society
2. Develop ability to interpret and evaluate primary scientific literature
3. Understand virological assays and how to interpret them
4. Learn strategies for viral entry, genome organization, protein expression and replication
5. Acquire basic understanding of virus-host interactions
6. Compare mechanisms of viral pathogenesis

MICR 452 Viral Infection and Immunity Units: 3.00
Course material will focus on the molecular basis for virus pathogenesis including host immune responses to virus infection, and viral countermeasures. Emphasis will be on viral infections that result in gastrointestinal, haematological, neurological, and respiratory diseases. Tutorials will focus on discussion of current and seminal literature.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (MICR 221; MICR 271), and one of (MICR 360; MICR 386).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Demonstrate understanding of advanced virology topics.
2. Development of literature-based research skills in order to evaluate and critique how current research articles advance the field of virology.
3. Development of writing skills in order to critique current scientific literature and use this to support a personal opinion.
4. Participate in a collaborative group presentation to convey current topics in virology.

MICR 461 Advanced Immunology Units: 3.00
Advanced immunology course focused on current topics in immunology and immunology-related scientific research.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and a minimum grade of A- in one of (MICR 360; MICR 386).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Participate in a collaborative group presentation to convey current immunology topics.
2. Create an individual presentation in order to explain specific aspects of your topic.
3. Development of research skills in order to evaluate and critique how current research articles advance the field.
4. Development of writing skills in order to critique current scientific literature and use this to support a personal opinion.

MICR 483 Advanced Topics in Infectious Diseases Units: 3.00
This course will examine basic principles of infectious diseases such as Pathophysiology, Epidemiology and Transmission, and Control of Infectious Agents including an emphasis on Antimicrobial Therapy and Resistance. Selected Infectious Disease syndromes will be examined to explore unique host microbe interactions. Students will work through the topics online using interactive multimedia modules. Student assessment will include weekly online quizzes, group, and individual assignments. Active participation will also form part of student assessment. At the completion of the course, students will have an understanding of the key concepts of emerging topics in infectious diseases.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Requirements: Prerequisite Minimum 4th year (Level 4) standing and one of (MICR 320/3.0; MICR 270/3.0; MICR 221/3.0; MICR 271/3.0), or permission from the instructor. Equivalency BMED 483/3.0*.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Integrate epidemiological and transmission principles of infectious diseases to independently or collaboratively explain, discuss, and appreciate the global impact of infectious diseases.
2. Use the principles learned during the study of selected infectious disease syndromes and apply those principles to advocate for effective control of infectious diseases.
3. Integrate information found in course modules and primary literature to explain the pathophysiology of selected infectious diseases and the role it plays in disease progression and treatment.

MICR 484 Infectious Diseases and Zoonoses Units: 3.00
This course provides the opportunity for students to apply foundational to advanced knowledge of medical microbiology and infectious disease, particularly with respect to how different vectors contribute to the overflow of pathogens into humans.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Lecture, 36 Group Learning, 36 Online Activity, 24 Private Study)
Requirements: Prerequisite Level 3 or above and (MICR 221/3.0 or MICR 270/3.0 or MICR 271/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Gain a broad understanding of medically relevant pathogens, including bacteria, viruses, fungi, and parasites, to enable the development of an overarching concept of the key components involved.
2. Apply foundational practices of infection prevention and control to predict how those processes mitigate the spread of pathogens from animals to humans.
3. Apply knowledge and concepts of microbiology to demonstrate how pathogens impact their animal host and then predict the interplay between infection control interventions, local environments and human populations.
4. Identify, describe, and predict the outcome of a change in pathogenesis in their non-animal hosts (i.e. humans or other intermediates) and how this might impact human health.

NSCI 323 Foundational Neuroscience Units: 3.00
Fundamental properties of the nervous system. Emphasis placed on the properties of neurons that are fundamental to neuron-to-neuron communication, the formation of neural circuits, and the repair of the nervous system following injury. Tutorials introduce techniques and neurological problems that illustrate principles of neural function.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Lecture, 24 Group Learning, 36 Online Activity, 24 Off-Campus Activity, 12 Private Study)
Requirements: Prerequisite BIOL 339/3.0 or KNPE 125/3.0 or KNPE 225/3.0 or (PHGY 215/3.0 and PHGY 216/3.0) or PSYC 271/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Recognize and describe essential knowledge required to navigate the field of neuroscience and further apply this knowledge into advanced molecular, cellular, systems, and behavioral neuroscience.
2. Identify, describe, and critique the most current ruling principles in neuroscience related to: How neurons develop, grow, migrate, and connect to form neuronal circuits and a functional mature nervous system.
3. Identify, describe, and critique the most current ruling principles in neuroscience related to: How neurons and neuronal circuits acquire, transmit, store, and retrieve information.
4. Identify, describe, and critique the most current ruling principles in neuroscience related to: How dysfunctional neuronal function results in developmental and functional diseases of the nervous system.

NSCI 324 Systems Neuroscience Units: 3.00
Fundamental properties of the nervous system. Emphasis placed on the properties of neurons and neural circuits that underlie behaviour and cognitive functions within selected neural systems, such as sensory, motor, reward, and autonomic systems. Tutorials introduce techniques and neurological problems that illustrate principles of neural function.
Requirements: Prerequisite (PHGY 215/3.0 and PHGY 216/3.0) or PSYC 271/3.0 or NSCI 323/3.0 or PHGY 210/6.0 or PHGY 212/6.0 or PHGY 214/6.0.
Offering Faculty: Faculty of Health Sciences

NSCI 325 The Science of Psychedelics Units: 3.00
An active learning-based course aimed at providing a thorough scientific perspective on psychedelics. Students will learn about the historical and cultural relevance of psychedelics, their mechanisms of action, and their current and predicted therapeutic use. Emphasis will be placed on rigorously verified knowledge surrounding psychedelic therapy. Course format encourages students to acquire and/or perfect essential learning competencies such as critical thinking, independent learning, problem-solving, communication and teamwork.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (24 Lecture, 24 Group Learning, 36 Online Activity, 24 Off-Campus Activity, 12 Private Study)
Requirements: Prerequisite Level 3 or above.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Appraise the demonstrated and proposed psychedelics therapy.
2. Assess the ratio risk and benefits of psychedelic therapy.
3. Compare the pharmacodynamic and pharmacokinetic properties of various psychedelics.
4. Contrast and compare the mechanisms of action of psychedelics and psychedelic-like drugs.
5. Recognize and appraise the historical and cultural uses/ significance of psychedelics.

NSCI 401 Introduction to Theoretical Neuroscience Units: 3.00
This course will provide an introduction to the main modelling approaches and theoretical concepts in Neuroscience. The computational anatomy of the brain and how it implements perception, learning, memory, decision making and motor control, among other topics, will be discussed.
RECOMMENDATION NSCI 323/3.0, NSCI 324/3.0, ANAT 312/3.0, PSYC 271/3.0.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (BIOL 243; CHEE 209; COMM 162; ECON 250; GPHY 247; HSCI 190; KNPE 251; NURS 323; POLS 285; PSYC 202; SOCY 211; STAM 200; STAT 263; STAT 267; STAT 367).
Offering Faculty: Faculty of Health Sciences

NSCI 403 Introduction to Neuroimaging Units: 3.00
This course covers the theory and practice of modern neuroimaging methods. Topics include data acquisition, research study design, and analysis methods. Functional MRI is presented in the most depth, but computed tomography (CT), positron emission tomography (PET), and single photon emission computed tomography (SPECT), are also covered.
Learning Hours: 120 (36 Lecture, 84 Private Study)
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (NSCI 323; NSCI 324; ANAT 312; PSYC 271; PSYC 370).
Offering Faculty: Faculty of Health Sciences

NSCI 422 Cellular and Molecular Neuroscience Units: 3.00
A course providing 1) the essentials in cellular and molecular neuroscience to pursue a graduate program and/or a career in neuroscience or related field, and 2) independent learning and communication skills applicable broadly. The course is divided into three segments: 1) neuronal integration, 2) synaptic plasticity, and 3) neuromodulation.
NOTE BMCO students should contact the Department regarding prerequisites.
Learning Hours: 119 (12 Lecture, 24 Seminar, 8 Group Learning, 6 Individual Instruction, 69 Private Study)
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and a minimum grade of B in NSCI 323.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. To develop student's critical thinking skills
2. To encourage student's independent learning and problem-solving skills
3. To perfect oral and written communication skills
4. To learn and discuss current knowledge on 1-neuronal integration, 2-synaptic plasticity, 3-neuromodulation.

NSCI 424 Neurodegeneration and Brain Health Units: 3.00
This course focuses on the molecular basis of neurodegeneration in Alzheimer's disease and related neurodegenerative diseases. The course further covers the molecular basis of the systemic communication with the brain and the ability of circulatory blood factors to foster brain resilience and health. The course is designed to cover current research developments on the field. The course intends to advance critical thinking and has a focus to improve student's oral skills. Assessments include three presentations.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Learning Hours: 120 (36 Lecture, 60 Group Learning, 24 Private Study)
Requirements: Prerequisite Level 4 or above and registration in a LISC Major or Specialization, or BHSc Program, and a cumulative GPA of 2.50, and (ANAT 312/3.0 or NSCI 323/3.0 or NSCI 324/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Understand and integrate the basic principles of neurodegeneration processes in Alzheimer's disease and related neurodegenerative diseases in order to communicate how they develop in the brain at a molecular, cellular, and behavioural level.
2. Understand and integrate, at the molecular level, neuroprotective processes stimulated by the systemic communication with the brain and how this communication may counteract neurodegeneration.
3. Critically analyze, and/or interpret scientific data in primary research reports and reviews in order to contextualize and communicate current knowledge in the field of neurodegeneration and brain health.
4. Learn to prepare effective slide deck presentations to use in the communication of the scientific basis of neurodegeneration and brain health.
5. Provide peer assessment, as well as thoughtful, logical questions and comments to the projects presented by peers.

NSCI 429 Disorders of the Nervous System Units: 3.00
A multi-disciplinary course exploring advanced concepts of clinical neuroscience. Topics include stroke, traumatic brain and cord injuries, neurodegenerative disorders, epilepsy, schizophrenia, depression, deep brain stimulation, pain and placebo effects, normal and abnormal aging, stem cells. Students will learn to critically evaluate scientific literature and present these concepts to classmates during student-led seminars. Restricted to fourth-year students. Enrollment is limited.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (NSCI 322; NSCI 323; NSCI 324; ANAT 312).
Offering Faculty: Faculty of Health Sciences

NSCI 433 Cellular Elements of the Nervous System: Responses to Injury and Disease Units: 3.00
Cellular dysfunction is a critical feature of neural injury and disease among humans. This course will examine the cellular elements of the mammalian central and peripheral nervous system, with an emphasis placed on understanding normal and abnormal cellular function in both humans and animal models.
NOTE Restricted to students registered in the 4th year.
Learning Hours: 114 (36 Lecture, 36 Laboratory, 42 Private Study)
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (NSCI 323; NSCI 324), and one of (ANAT 309; ANAT 312).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Gain a greater understanding of the cellular organization of the mammalian nervous system.
2. Understand the cellular contributions to normal functioning both centrally and peripherally.
3. Understand how cells respond to injury or disease of the nervous system.

NSCI 444 Controversies in Neuroscience Units: 3.00
As insight regarding the human brain expands, so do related issues such as what constitutes personhood, what drives the criminal mind, intelligence-enhancing drugs and end-of-life issues. Lead by experts who deal daily with such concerns, we will focus weekly on a particular topic in neuroscience which impacts on society.
Learning Hours: 108 (12 Lecture, 24 Seminar, 72 Private Study)
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and one of (NSCI 322; NSCI 323; NSCI 324; ANAT 312).
Offering Faculty: Faculty of Health Sciences

NSCI 483 Neurobiology of Learning and Memory Units: 3.00
An exploration of brain systems underlying how we learn and remember, and how they become disordered. Online multimedia modules and study of cutting edge research articles reveal how modern techniques and ideas are driving neuroscience forward. Requires interviewing a person with a disorder in order to learn to advocate for them in society.
Requirements: Minimum 4th year (Level 4) standing and one of [(PHGY 215/3.0 and PHGY 216/3.0); PSYC 271/3.0; PHGY 214/6.0; PHGY 210/6.0]. For LISC and BCHM Honours students Level 4 and registration in a LISC or BCHM Major or Specialization Plan and a GPA of 2.5
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Collaborate with others in order to effectively collect, analyze, and interpret scientific data.
2. Communicate an integrated understanding of the scientific basis and societal impact of neurological disorders of learning and memory to colleagues in order to advocate for vulnerable populations.
3. Critically evaluate primary research reports and reviews in order to contextualize and communicate current knowledge in the field of learning and memory.
4. Demonstrate skill in providing and responding to feedback in a professional manner.
5. Describe the basic principles of learning and memory processes in order to communicate how they are generated by the brain at a cellular, systems, and behavioural level.

PATH 111 Data Science Through Visualization Units: 3.00
This blended course is designed to bring awareness and raise excitement in data science. Through different types of visualization students will learn key concepts of data science and big data investigation. The course will also explore examples of how data science is applied to solve problems in various disciplines.
Learning Hours: 120 (12 Lecture, 24 Group Learning, 36 Online Activity, 48 Private Study)
Requirements: Prerequisite None.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Perform, observe, and interpret visualization of data from variety of sources.
2. Apply skills acquired to critically evaluate and summarize data.
3. Describe appropriate data visualization for diverse types of challenges.
4. Collaborate and communicate an understanding of concepts and diverse perspectives in data science.

PATH 120 Understanding Human Disease in the 21st Century Units: 3.00
The course provides an introduction to human disease and our understanding of key conditions with major global health and societal impact, including cardiovascular, neurological and infectious diseases and cancer. The basic concepts of disease mechanisms and current management will be explored using specific diseases and clinical example cases. Also offered online.
LEARNING HOURS may vary 120(12L;36G;36O;36P)
Requirements: One-Way Exclusion PATH 310/3.0; CANC 440/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Access the individual and population impacts of human disease by effectively researching major issues affecting changes in global health
2. Apply the skills acquired to critically evaluate scientific literature on human disease
3. Collaborate and communicate an understanding of the causes and implications of human disease including current and future management and treatments.
4. Explain how different populations are differentially impacted by the same disease
5. Identify and describe mechanisms underlying human disease and be able to recognize potential origins of human disease states

PATH 310 Introduction to Pathology and Molecular Medicine Units: 3.00
An introduction to pathology and molecular medicine. The course will be organized around a specific set of diseases, designed to illustrate basic concepts in the molecular biology, biochemistry, and pathology of human disease.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office.
Requirements: Prerequisite Level 3 or above and (BCHM 102/3.0 or BCHM 218/3.0 or BCHM 270/3.0 or BIOL 205/3.0).
Course Equivalencies: PATH310, PATH410
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Integrate underlying genetic and biochemical factors with resultant pathologic processes and disease states.
2. Compare and contrast the contributions of genetics and environmental factors to disease.
3. Apply course concepts to a hypothetical disease to identify its molecular basis and clinical features, and rationalize testing and treatment options.
4. Clearly and concisely articulate ideas in both oral and written formats, working individually as well as in team-based learning groups.

PATH 381 Clinical Biochemistry Units: 3.00
This upper-year health sciences course covers topics relating to the integrated role of clinical biochemists within a healthcare team. Students will critique analytical techniques in the context of various diseases. Through problem-based learning, students will also explore how to identify and troubleshoot issues in laboratory testing.
Learning Hours: 120 (12 Lecture, 12 Tutorial, 36 Online Activity, 60 Private Study)
Requirements: Prerequisite Level 3 or above and (BCHM 102/3.0 or BCHM 218/3.0 or BCHM 270/3.0) and 3.0 units from (BIOL 243/3.0; GPHY 247/3.0; HSCI 190/3.0; KNPE 251/3.0; NURS 323/3.0; POLS 285/3.0; PSYC 202/3.0; STAM 200/3.0; STAT 263/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe the role of clinical biochemistry in healthcare by linking clinical laboratory principles to patient care.
2. Critique how specific clinical laboratory test methodologies can be used to screen for, diagnose, and/or manage a given disease.
3. Scrutinize and assess the clinical application of novel biomarkers in the context of relevant, current literature.
4. Demonstrate verbal and written proficiency in clinical laboratory instrumentation and methods by navigating troubleshooting scenarios involving issues with a clinical biochemistry test.

PATH 411 Applied Data Science in Molecular Medicine Units: 3.00
The course introduces data science tools and methods to handle, process and extract knowledge and insights from large molecular medicine datasets. The focus will be on applying statistics, machine learning and related methods for the analysis of various research datasets and digital pathology.
Learning Hours: 120 (18L12pC, 84 Group Learning, 6 Online Activity, 36 Private Study)
Requirements: Prerequisite BIOL 243/3.0 or ECON 250/3.0 or GPHY 247/3.0 or HSCI 190/3.0 or NURS 323/3.0 or POLS 285/3.0 or PSYC 202/3.0 or SOCY 211/3.0 or STAT 263/3.0 or STAM 200/3.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Perform basic programming and scripting (Mini Assignments 1 and 2, Group Assignments 1-3)
2. Design experiment with data analysis in mind (Mini Assignment 2, Group Assignments 1-3)
3. Perform data analysis that includes sequence alignment, data preprocessing, unsupervised and supervised learning and statatistics (Mini Assignments 1 - 3, Group Assignments 1 - 3)
4. Work in a team to complete assignments, report and present results (Group Assignments 1 – 3)
5. Assess and critique analytical methodology found in scientific publications (Paper critiques)

PATH 425 Current Topics in Human Genetics Units: 3.00
An advanced level course introducing current topics in human genetics. The course will focus on the significance and implications of genetic variation and its role in disease, development and normal human diversity. In particular, the course will explore the future directions and implications of human genetic research in the post genomic era. Participation in seminars and group discussions is required. Enrollment is limited.
RECOMMENDATION BCHM 218/3.0 or permission of the course coordinator.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and a minimum grade of B in one of (BIOL 205; PATH 310). Exclusion BIOL 441.
Offering Faculty: Faculty of Health Sciences

PATH 430 The Molecular Basis of Disease Units: 3.00
An in-depth perspective of the pathogenesis of human disease. An integration of the genetic, biochemical, physiologic, anatomic, and general etiologic factors which play a role in the progression of several specific diseases from inception to death or recovery. The course will comprise short introductory presentations by teaching faculty followed by the presentation and discussion of relevant scientific papers by students. Given jointly with PATH 826/3.0.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and PATH 310.
Offering Faculty: Faculty of Health Sciences

PHAR 100 Introductory Pharmacology Units: 3.00
Topics covered include central nervous system stimulants and depressants, narcotics, alcohol, cardiovascular agents, contraceptives, environmental toxicants, mechanism of drug action and disposition, antibiotics, drugs used in sports, over-the-counter drugs, food additives, and vitamins.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office. Learning Hours may vary.
Requirements: One-Way Exclusion PHAR 230/3.0; PHAR 270/3.0; PHAR 340/3.0; PHAR 370/3.0; PHAR 450/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply learned knowledge of the essential elements of a phase 3 clinical trial to design a hypothetical clinical trial for a new drug to treat a specific disease or condition. (PLO 4, 8; Assessment 1)
2. Describe the mechanism of action and physiological effects of classes of drugs to be able to summarize the reason(s) for their use and abuse in society. (PLO 4, 6; Assessments 2-5)
3. Discuss the pharmacological principles of drug abuse to advocate for healthy and appropriate drug use. (PLO 4, 6; Assessment 2)
4. Effectively discuss and apply relevant pharmacological principles within a group to successfully complete collaborative assignments. (PLO 4; Assessments 1, 2)

PHAR 370 Fundamentals of Pharmacology and Therapeutics Units: 3.00
An interdisciplinary course that introduces the basic principles and clinical applications of pharmacology. This 12-week course covers six topics. Students will work through the topics online, using a combination of online modules, readings, and short video clips. Students will participate in a variety of assessments throughout the course.
LEARNING HOURS may vary: 120(48O;72P)
Also offered online.
Requirements: Corequisite One of (PHGY 215/3.0 and PHGY 216/3.0) or KNPE 225/3.0. Exclusion PHAR 230/3.0; PHAR 270/3.0; PHAR 340/3.0 One-Way Exclusion PHAR 450/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Apply the principles of drug therapy to solve basic pharmacokinetics problems
2. Describe how drugs affect the body and how the body affects drugs to predict beneficial and adverse drug effects
3. Discuss the use of therapeutics in a variety of physiology systems and processes to propose basic therapeutic plans for common diseases and ailments
4. Explain how drugs target and combat infections and cancers to evaluate the pros and cons of available treatment options and to advocate for appropriate use to decrease the emergence of resistance
5. Source and critically analyse phase 3 clinical trials to recognize a well-designed, valid study for a new drug

PHAR 380 Toxicological Inquiry Units: 3.00
Students in this course will learn about the human toxicology associated with both pharmaceutical and environmental exposures. General principles and mechanisms of toxicity will be introduced in order to describe how different pharmaceuticals and environmental compounds can lead to adverse effects in humans. Students will apply module content to current toxicological topics through exploration of popular media and the scientific literature. Development of a research proposal contributes to a large proportion of course work and assessment.
NOTE Also offered online. Consult Bachelor of Health Sciences program office.
Learning Hours: 120 (60 Online Activity, 60 Private Study)
Requirements: Prerequisite Level 2 or above and (BCHM 102/3.0 or BCHM 218/3.0 or BCHM 270/3.0 or BCHM 316/3.0 or BIOL 334/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe principles and mechanisms of toxicity in order to explain the range of possible effects following exposure to chemicals.
2. Consolidate academic literature and module content in order to develop a research question and hypothesis for an experiment involving a potentially toxic chemical.
3. Compare and contrast popular media representations of toxicity with relevant scientific literature in order to critically evaluate how toxicology is perceived by the public.

PHAR 416 Xenobiotic Disposition and Toxicity Units: 3.00
An advanced study of chemical disposition and toxicity. Topics include toxicokinetics, biotransformation, metabolite-mediated toxicity, free radicals, the mechanism of action of toxicants, effects of toxicants on organ systems and a detailed examination of selected toxic agents.
NOTE BCHM, BIOL, BMCO, ELSC, and ETOX students should contact the Department for permission to enrol in this course.
Learning Hours: 120 (36 Lecture, 84 Private Study)
Requirements: Prerequisite Level 4 or above and registration in a LISC/BCHM Major or Specialization, ELSC Specialization, or BHSc program, and a CGPA of 2.5 or higher and (PHAR 370/3.0 or BCHM 310/9.0 or BCHM 316/3.0).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Describe principles and mechanisms of toxicity.
2. Explain the effects of exposure to chemicals in different situations.
3. Compare and contrast mechanisms of toxicity in different target tissues.
4. Consolidate knowledge to be able to critically analyze the attributes and shortcomings of peer reviewed manuscripts in the discipline of toxicology.
5. Present key points related to specific topics in toxicology.

PHAR 480 Drug Discovery and Development Units: 3.00
This survey course covers the life-cycle of pharmaceutical products including discovery, development, and the transition to a generic or over-the-counter medication. Specific themes include target identification, design and synthesis, efficacy determination, optimization, preclinical safety assessment, clinical trials, and the differences between biologics and small chemical entities. Social and economic pressures exerted upon the pharmaceutical industry are also explored.
Requirements: Minimum 4th year (Level 4) standing and one of (PHAR 230/3.0; PHAR 370/3.0; PHAR 340/3.0). LISC MAJ SSP students require a GPA of 2.5. Note this course cannot be used as credit towards the LISC DDHT SSP Plan Exclusion DDHT 459/3.0; DDHT 460/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Critically analyze the social and economic implications of legislative decisions pertaining to the pharmaceutical industry to argue a particular side of this these decisions.
2. Develop solutions to drug discovery/development problems to discuss either orally or in writing solutions to these problems.
3. Develop an understanding of the biologic, social, and economic constraints that influence drug discovery and drug development.
4. Develop and refine professional interpersonal communication skills.

PHGY 170 Human Cell Physiology Units: 3.00
This is an introductory level course on the structure and function of human cells for students interested in pursuing human health-related disciplines. Students will also learn the principles of energy metabolism, cell growth and proliferation, and how cells interact with their environment. There is also an overall focus to relate cellular processes to human function and disease, culminating in a group presentation focused on one specific cell process and how it affects health. Students taking this course will be well-prepared for upper year molecular biology courses.
NOTE Also offered online. Consult the Bachelor of Health Sciences program office. Learning Hours may vary.
Learning Hours: 114 (36 Online Activity, 78 Private Study)
Requirements: One-Way Exclusion KNPE 225/3.0
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Identify and describe basic cellular components to be able to characterize their roles in the structure and function of human cells (PLO 1,3; Assessment 1-5)
2. Integrate a basic understanding of cellular processes to articulate how human cells interact with their environment (PLO 1,3; Assessment 1-5)
3. Recognize key principles of human cell function in order to understand the cellular basis of health and disease (PLO 1,3; Assessment 1-5)
4. Understand how cells, tissues, organs and systems work together in order identify and explain the mechanisms through which the body maintains homeostasis.

PHGY 215 Principles of Mammalian Physiology l Units: 3.00

The focus of this course is on the central and peripheral nervous systems, muscle physiology, the heart, and the vascular system.

NOTE This course may be paired with PHGY 216/3.0 to achieve an introductory physiology full course (6.0 units).

NOTE Although it is recommended to take PHGY 215/3.0 first, this course can be taken before, after, or concurrently with PHGY 216/3.0.

NOTE Also offered online. Consult the Bachelor of Health Sciences program office. Learning Hours may vary.

Requirements: Minimum 2nd year (Level 2) standing. Exclusion (KNPE 125/3.0; KNPE 225/3.0); [PHGY 210/6.0; PHGY 214/6.0; (PHGY 215/3.0 and PHGY 216/3.0)].

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Apply analytical skills to further your knowledge of physiological systems. (PLO8; Assessment 1,2)
2. Define homeostasis and apply feedback loops to predict and understand the control of physiological systems in the face of a variable and changing environment. (PLO1; Assessments 1,3,4)
3. Describe the physiology of the nervous system, muscles, and the cardiovascular system to identify and explain pathophysiological states. (PLO2; Assessments 1-4)
4. Note: PLO refers to the program learning outcomes to which each course learning outcome matches to.
5. Understand physiology at the molecular, cellular, and system levels in order to explain their combined role in integrative physiology. (PLO1,2; Assessments 1-4)

PHGY 216 Principles of Mammalian Physiology ll Units: 3.00

The focus of this course is the physiology of the respiratory, renal, gastrointestinal, endocrine, and reproductive system.

NOTE This course may be paired with PHGY 215/3.0 to achieve an introductory physiology full course (6.0 units).

NOTE Although it is recommended to take PHGY 215/3.0 first, PHGY 216/3.0 can also be taken before or concurrently with PHGY 215/3.0.

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

Learning hour may vary.

Requirements: Minimum 2nd year (Level 2) standing. Exclusion (KNPE 125/3.0;KNPE 225/3.0); [PHGY 210/6.0;PHGY 214/6.0;(PHGY 215/3.0 PHGY 216/3.0)]. Note it is recommended to take PHGY 215/3.0 first, PHGY 216/3.0 can be taken before or concurrently with PHGY 215/3.0.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Apply research skills to further your knowledge of physiological systems. (PLO8; Assessment 2)
2. Describe the physiology of the respiratory, renal, gastrointestinal, endocrine, and reproductive systems to define normal and abnormal function. (PLO2; Assessments 1-4)
3. Note: PLO refers to the program learning outcomes to which each course learning outcome matches to.
4. Understand physiology at the molecular, cellular, and system levels in order to explain how their roles and functions are combined in integrative physiology. (PLO1,2; Assessments 1-4)

PHGY 290 Investigation of Human Physiological Responses Units: 3.00
This course is designed to advance critical thinking and practical lab skills through collaborative experimentation on human physiological responses to various stimuli. Upon completion, students should be able to (i) plan and perform experimental protocols, (ii) collect, analyze and interpret data and (iii) produce quality presentations of findings.
Learning Hours: 120 (36 Laboratory, 48 Online Activity, 36 Private Study)
Requirements: Corequisite Minimum 2nd year (Level 2) standing, registration in a BHSc, LISC, or BCHM program, and co-req PHGY 215/3.0 Note: We recommend that students should have already completed a statistics course (e.g. HSCI 190/3.0 or equivalent)
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Collaborate with group members to develop a testable hypothesis and experimental design, using an iterative process that incorporates feedback from group members.
2. Demonstrate the ability to defend an experimental design with respect to the methods and approaches used to collect experimental data (i.e. heart rate, blood pressure, hand-eye coordination and cognitive ability).
3. Evaluate and interpret experimental results to present a study with its limitations in a visual poster, oral presentation or written report.
4. Evaluate and report on peer reviewed literature with respect to appropriate ways of measuring physiological responses (heart rate, blood pressure, hand-eye coordination and cognitive ability) to a stimulus.

PHGY 350 Pathophysiology Units: 3.00
An introductory course in Pathophysiology in which the underlying functional changes of cell and cell systems will be discussed in association with a variety of disease processes.
Learning Hours: 114 (36 Lecture, 6 Online Activity, 72 Private Study)
Requirements: Prerequisite (PHGY 215 and PHGY 216) or (KNPE 125 and KNPE 225) or PHGY 210 or PHGY 212 or PHGY 214
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. identify the mechanisms (cellular and systemic) by which selected diseases occur in the major physiologic systems of the body
2. recognize and identify the major signs/symptoms of selected diseases, and understand how they are produced by the diseases processes implicated
3. differentiate between similar-but-different diseases based on their signs/symptoms and pathogenesis (basic principles of differential diagnosis)
4. briefly describe selected diagnostic methods and key treatment approaches for the diseases studied, based on your understanding of the underlying disruptions to normal physiologic function occurring within each disease
5. effectively use appropriate terminology to describe disease etiology, pathogenesis, treatment and outcome(s)
6. work effectively with a diverse group of peers to plan and execute a concise research investigation
7. present your findings on a specific disease, as obtained through investigation of primary sources, in a clear, balanced, and engaging presentation communicated at a level appropriate to your audience.

PHGY 355 Biomedical Respiratory Physiology Units: 3.00
An intermediate course focusing on biomedical applications of lung biology. Topics include lung mechanics, gas exchange, acid-base balance and control of breathing.
Requirements: PREREQUISITE (PHGY 215/3.0 and PHGY 216/3.0) or PHGY 210/6.0 or PHGY 212/6.0 or PHGY 214/6.0.
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Understanding human lung function in various paradigms, including: social determinants of lung health; normal and pathologic lung function (mechanical, chemical, neural, and integrative) at rest, in exercise and in sleep; differences between human lung function and that of other species adapted to different environments (structure:function)
2. Developing competency in and appreciation for diverse approaches to pulmonary function testing (lab component)
3. Laying a foundation of scientific writing skills, including effective literature searching, abstract-writing, and report-writing.

PHGY 424 Ion Channels of Excitable Cells Units: 3.00
The electrophysiology and biophysics of neuronal and cardiac membranes; molecular biology, structure, and function of ion channels. Students will learn to critically evaluate scientific literature. Instructional format is primarily student-led seminars.
Requirements: Prerequisite Minimum 4th year (Level 4) standing, registration in a LISC/BHSc Major or SSP, a GPA of 2.5, and a minimum grade of C in one of ([PHGY 215 and PHGY 216]; PHGY 210/6.0; PHGY 214/6.0; PHGY 212/6.0).
Offering Faculty: Faculty of Health Sciences

REPD 372 Reproduction and Development Units: 3.00
Students will obtain a general background on various aspects of human reproduction, ranging from male and female gamete development to pregnancy and birth. The course will serve as a gateway to more advanced courses in human reproduction and development.
NOTE Also offered online. Consult the Bachelor of Health Sciences program.
Learning Hours: 120 (60 Online Activity, 60 Private Study)
Requirements: Minimum 3rd year (Level 3) standing, one of (ANAT 100/3.0; ANAT 101/3.0; [ANAT 215/3.0 and ANAT 216/3.0]; [ANAT 315/3.0 and ANAT 316/3.0]) and one of (PHGY 210/6.0; PHGY 214/6.0; [KNPE 125/2.0 and KNPE 225/3.0]; [PHGY 215/3.0 and PHGY 216/3.0]).
Offering Faculty: Faculty of Health Sciences
Course Learning Outcomes:

1. Critically assess scientific literature and media reports in human reproductive biology to support arguments in oral and written work.
2. Describe key fundamental concepts in male and female reproductive biology to create a framework that can be applied to more complex topics in human reproduction.
3. Explain the scientific basis of diseases of pregnancy to determine their implications on health in later life.
4. Integrate course content through active discussion with peers to solve case-based problems related to pregnancy, parturition, and other topics in human reproduction.

REPD 473 Developmental Origins of Health And Disease Units: 3.00

REPD 473, Development Origins of Health and Disease, will cover how the early-life environment contributes to later-life health. Four major topics will be covered: maternal exposures, maternal nutrition, infection, and pregnancy complications. Students will learn about how alterations in the embryonic and fetal environment due to these four parameters can and do contribute to the development of non-communicable diseases that persist throughout life. Students will have the opportunity to explore and consolidate the academic literature pertaining to DOHaD, as well as investigating the resources available to these populations of patients.

Requirements: Minimum 4th year (Level 4) standing and one of (PHAR 230/3.0; PHAR 370/3.0; PHAR 340/3.0; PHAR 380/3.0) and REPD 372/3.0.

Offering Faculty: Faculty of Health Sciences

Course Learning Outcomes:

1. Align principles of the developmental origins of health and disease hypothesis with primary literature in the field in order to present, connect, and extend concepts within the research article(s)
2. Consolidate information pertaining to an untoward embryonic/fetal environment in order to describe how that environment contributes to the individual's long-term health and disease
3. Define the hypothesis and mechanisms of the Developmental Origins of Health and Disease (DOHAD) to explain the connection between the in utero environment and different adult diseases.
4. Explain the consequences of developmental exposures in order to teach the public about a specified condition and advocate for support and resources for the patient population.