### 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

### 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

### 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:** Minimum 3rd year (Level 3) standing and one of (BCHM 218/3.0; BCHM 270/3.0).

**Course Equivalencies:** PATH310, PATH410

**Offering Faculty:** Faculty of Health Sciences

### 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:** Minimum 3rd year (Level 3) standing and one of (BCHM 270/3.0 or BCHM 218/3.0), or permission of the instructor.

**Offering Faculty:** Faculty of Health Sciences

### PATH 382 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:** Minimum 3rd year (Level 3) standing and one of (BCHM 270/3.0 or BCHM 218/3.0), or permission of the instructor.

**Offering Faculty:** Faculty of Health Sciences

### 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 STM 200/3.0.

**Offering Faculty:** Faculty of Health Sciences

### 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 a minimum grade of B in one of (BIOL 205; PATH 310).

**Offering Faculty:** Faculty of Health Sciences
PATH 499  Research Project in Pathology  Units: 12.00
A research project involving the study of human disease processes. The project will be supervised by a Faculty member in the Department and will provide opportunities for experimental design, data analysis and both written and oral presentation of results. Students must contact a potential faculty supervisor in the Spring preceding registration in fourth year.
NOTE Acceptance by a supervisor required prior to registration.
NOTE Students whose research requires the care and/or handling of animals must also complete the Introductory Animal Care Course and if required the appropriate Animal Use workshops through the Office of the University Veterinarian.
Learning Hours: 480 (288 Laboratory, 24 Group Learning, 24 Individual Instruction, 144 Private Study)
Requirements: Prerequisite Level 4 and registration in a LISC Specialization Plan and a cumulative GPA of 2.50 or higher. Exclusion ANAT 499; CANC 499; EPID 499; LISC 499; MICR 455; MICR 499; NSCI 499; PHAR 499; PHGY 499; REPD 499.
Offering Faculty: Faculty of Health Sciences

PATH 595  Independent Study  Units: 6.00
Offering Faculty: Faculty of Health Sciences