



# NORBERT BANYI

INTEGRATED SCIENCE  
AMBASSADOR

3RD YEAR, HONOURS

## THEME OF MY INTEGRATION:

### Personalized Medicine and Data Science

The profound implications of being able to influence bodily processes through genetics is extremely exciting to me. Artificial intelligence (an intrinsically data-driven process utilizing statistical concept) is a field that shows promising potential for improving diagnostic capabilities and the efficiency of medical systems. I believe that a combination of genetics, artificial intelligence, and statistics will be the core of the evolution of a personalized medical system that will be the next step to optimize health care.

## SAMPLE CURRICULUM RATIONALE

### CPSC 422 - Intelligent Systems

CPSC 422 is an advanced course in AI-based on CPSC 322 and will highlight how to develop intelligent systems that can observe, detail its observations with representations, make deductions on these observations, and respond accordingly. This can be useful in medicine when applied to diagnostic processes, treatment protocol development, patient monitoring/care, and works well with genomics to create efficient personalized medicine systems to offer precise, optimized care. This course will really nail down topics of decision making for A.I. to help me effectively be able to design systems using A.I.

### STAT 305 - Introduction to Statistical Inference

Stat 305 outlines (as the main emphasis) maximum likelihood estimation and likelihood ratios such as the Bayesian principles, which are used frequently in modern statistics as well as in the setting of clinical trials. This course also is very theoretical in regards to large sample statistics, which will serve as an excellent foundation for the statistics I would like to do with large data sets that I will be able to traverse using computer science. This course is foundational and will provide principles that are applicable across the board in statistics.

## WHAT I AM INTEGRATING:

### DISCIPLINE #1

#### Genetics:

I plan on getting a good grasp of biological mechanisms necessary for conducting meaningful genetic analysis (BIOL 335 and BIOC 302), as well as learning how these apply to the field of medicine (MEDG 419, MEDG 420, MICB 405, and MEDG 448A).

### DISCIPLINE #2

#### Statistics:

I hope to gain a firm grasp of statistics to better understand how to conduct studies with meaningful outcomes and correctly interpret these outcomes. Furthermore, I hope to better understand the statistical foundation on which machine learning and artificial intelligence is built (BIOL 300, STAT 305, STAT 302, STAT 306, and STAT443).

### DISCIPLINE #3

#### Computer Science:

The aim of the CPSC courses I am planning to take is two-fold: to create systems that can traverse large data sets and systems that can interact with data presented in various formats through A.I. (CPSC 330, CPSC 322, CPSC 422, and CPSC 425).

## CONTACT

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