MSc Data Science Knowledge Mapping Form (For Pre-assessment Purpose)

To be successful in the Data Science program, one needs to have knowledge from three pillars, namely Mathematics, Statistics and Computing Science, as well as domain knowledge. This is an opportunity for you to list your experience in the above-mentioned areas. For more information on knowledge preparation for this program, kindly visit the following link: https://www.tru.ca/science/masters-degrees/mscds/admission/knowledge-preparation.html.

Important: This fillable PDF is for pre-assessment application purpose only. Applicants will be invited to submit an online form again at a later stage during the application process.

*Required

I understand that if the information I provide on these forms does not match the information provided on my transcripts, my pre-assessment application may be rejected.

Acknowledgement*	
◉	Yes
○	No

Personal Information – Enter your personal details

Select your bachelor's degree below* *If your degree is not listed, please select 'other' and enter your bachelor's degree in the next question.*	
○	BSc Statistics
○	BSc Computer Science
○	BSc Mathematics
○	BSc Data Science
○	BSc Atmospheric Science
○	BSc Physics
◉	BSc Information Security
○	BSc Information Technology

◯	BEng (Electrical, Software, Industrial, Mechanical)
◯	BTech
◯	BEcon
◯	BA
◯	Other, please specify:dffd fd f
Enter any additional post-secondary qualifications you have earned (if any).	
List any applicable specializations	
Non-Academic Qualifications	

Relevance to Computing Science and Statistics

Competitive students should have a minimum several dedicated computer science courses and several different dedicated statistics courses. List up to 8 of your most advanced, relevant courses in computer science and up to 8 of your most advanced, relevant courses in statistics that can be identified on your transcript. The nature of the course must heavily focus on topics in each discipline and be obvious from the title. Courses that do not appear to heavily cover topics in the discipline will be viewed unfavorably by the admissions committee.

List the course numbers, names, and grades obtained below. Please see below for the exact formatting we expect (Enter only one course per line).

Important: If your answer is not clear and as per the mentioned format, it may not be reviewed.

Computing Science (see example below)		
COMP 1130	Computer Programming I	A
COMP 1230	Computer Programming II	A-

COMP 2230	Data Structures and Algorithm Analysis	A
Enter your answer in the same format below		
Statistics (see example below)		
STAT 1200	Introduction to Statistics	B
STAT 2000	Probability and Statistics	A-
STAT 3060	Applied Regression Analysis	A
Enter your answer in the same format below		

Prerequisites

List **only the course numbers** on your transcript that heavily covered in depth the corresponding prerequisite knowledge for admission. Please separate each course code with a comma. If it is not obvious to the admissions committee by the title of the course, the committee will pass over the application unless clarifying information is provided (e.g., official course outline or explanation in personal statement).

Example: DASC 5410, DASC 6820

Multivariable Calculus *(equivalent to TRU MATH 2110: Calculus 3)* Multivariable derivatives Multivariable integrals Vector approach: gradients, Hessian matrix
Linear Algebra *(equivalent to TRU MATH 2210: Linear Algebra)* Vector space proofs Matrix inversion theorems Diagonalization/decompositions Orthogonalization and projections Solving matrix equations
Computing Science (*equivalent to TRU COMP 1230: Computer Programming II*) Basic methods of representing data in CS Implement and analyze fundamental data structure, e.g., lists, stacks, queues, and graphs Implementation of algorithms using data structure Cost trade-offs of each data type Basic programming
Introductory Statistics (*equivalent to TRU STAT 2000: Probability and Statistics*) Basic descriptive statistics

Central Tendency Basic probability concepts Expectation, variance Inference basics including hypothesis testing and confidence intervals Introduction to regressiom Introduction to sampling and experimental design

Advanced Courses

List **only the course numbers** on your transcript that heavily covered in depth the corresponding advanced knowledge for admission. Please separate each course code with a comma. If it is not obvious to the admissions committee by the title of the course, the committee will pass over the application unless clarifying information is provided (e.g., official course outline or explanation in personal statement).

Example: DASC 5410, DASC 6820

Database topics Database design techniques, using entity relationship model and object-oriented approach to designing database systems Data description language, data manipulation language (updates, queries, reports), and data integrity Experience with SQL
Algorithms Asymptotic (and other) analysis of algorithms Computational complexity Identify and design algorithm patterns, e.g., search, sorting, divide, greedy, parallel
Artificial Intelligence Knowledge representation Problem solving, planning, learning Any of the following topics: machine learning, neural networks, soft computing, computer vision, expert systems, computational linguistics, bioinformatics, modelling and simulation
Scripting skills

String Manipulation Working in a shell Working with APIs
Probability Total variance, double expectation, moment generating functions Derivations of common distributions (e.g., Poisson t-, chi-square, gamma distribution)
Regression Matrix and differential solutions to least squares (simple and multiple linear regression) Model diagnostics, model selection
Inference Theory and applications of various test statistic and confidence interval construction Maximum likelihood topics Bayesian methods including derivations Likelihood ratio tests (including proofs) Proof of the Central Limit Theorem