PhD Breadth Requirement

A. Student, UVic ID: V00123456, astudent@uvic.ca
January 29, 2023

Supervisor: Prof. A. Professor

Members of the Supervisory Committee (if known): Department Member, Outside Member

Program Start Date: September 2022.

This document contains the items to be used to satisfy the Breadth Requirements set for PhD candidates by the Department of Computer Science at the University of Victoria. A summary is given in Table 1.

1. The proposal should include at least seven courses (equivalent at UVic to 10.5 units). Five of them must be graduate courses. Two of them can be 4th year undergraduate courses. (Note: a student may be allowed to make arrangements with the course instructor to upgrade a previous 4XX level course to a graduate level course).

2. Each category, namely Systems, Theory and Applications, *must* be covered by at least one 500-level U Vic CSC course. Categories for regularly listed courses may be found at Graduate Resources. *Topics courses will have a category specified in the official outline for the course*. The title of the course is not sufficient for determining the area. Directed Studies courses are not eligible for the fulfilment of this part of the requirement, nor is "other verifiable experience". An example of a suitable course selection is given below. These courses should be documented as shown in Table 1 below.

3. The minimum grade required for each course is the equivalent of B. Indicate the grade received in each course. For courses to be taken in the future, use the notation TBD, while for current courses use the notation IP. In the case that a grade of below B is obtained for a course, it is the responsibility of the student and supervisor to ensure that any remedial action is consistent with the Breadth Proposal. In case it is not, a new Breadth Proposal should be submitted.

4. Up to two relevant courses outside of CSc may be used, subject to approval by the student's Supervisory Committee and the CSc Graduate Studies Committee. The Breadth Proposal should provide a rationale for each non-CSc course.

Table 1: U Vic 500-level CSC Courses

Category	Course	Term	Grade
Applications	CSC 505 Graphics	2023F	TBD
Systems	CSC 525 Compiler Construction	2022F	A+
Theory	CSC 582B Topics in Theoretical Computer Science: Algorithms for Convex Optimization	2023S	IP

Table 2: Remaining Courses

Course	Term	Where	Level	Grade
CSC 429 Cryptography	2021F	UVic CSC	UG	A
CSC 571 Advanced Databases	2023S	UVic CSC	G	IP
CS 450 Computer Architecture	2021S	U Waterloo CSC	UG	A-
STAT 558 Design and Analysis of Experiments	2023F	UVic Math & Stats	G	TBD

Non-CS Courses

STAT 558

Calendar Description

Basic principles of experimental design; factorial designs; block designs; fractional factorial designs; response surface designs; nested and split-plot designs; optimal designs; techniques of analysis of variance; fixed effects models; random effects models.

Course Details

Textbook: *Design and Analysis of Experiments*, 8th Edition, by D.C. Montgomery

Topics:
Chapter 1. Introduction
Chapter 2. Simple comparative experiments
Chapter 3. Experiments with a single factor
Chapter 4. Randomized blocks, Latin squares and related designs
Chapter 5. Introduction to factorial designs
Chapter 6. The 2k factorial design
Chapter 7. Blocking and confounding in the 2k factorial design
Chapter 8. Two-level fractional factorial designs
Chapter 10. Fitting regression models
Chapter 11. Response surface methods and designs

Statistics Software: R will be used to do data analysis for this course in all assignments and projects

Determination of Final Grade:
Assignments: (4) 10%
Midterm Exam: 10%
Project: 30%
Final Exam: 50%

Project: The project will involve the design an analysis (using simulated data) of an experiment related to students' research focus

Rationale

A substantial component of my Ph.D. Dissertation will involve experimental design and analysis. As no courses providing the needed background are offered by the CS department, I am taking this course to gain the requisite background.