DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2024

CS2720 (A3) Formal Systems and Logic in Computing Science **3 (3-1-1.5) 82.5 Hours for 15 weeks**

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Franco Carlacci	**PHONE:**	780-539-2091
OFFICE:	C422	**E-MAIL:**	fcarlacci@nwpolytech.ca
OFFICE HOURS:	TBA		

CALENDAR DESCRIPTION: An introductory course to present the tools of set theory, logic and induction, and their use in the practice of reasoning about algorithms and programs. Basic set theory. The notion of a function. Counting. Propositional and predicate logic and their proof system will be studied. Inductive definitions and proofs by induction will be covered along with program specification and correctness.

PREREQUISITE(S)/COREQUISITE: 1000-Level CST course

REQUIRED TEXT/RESOURCE MATERIALS:

- Al Doerr, Ken Levasseur: Applied Discrete Structures, 3rd Edition – version 10 (2023)
- Paul Zimmermann et al: Computational Mathematics with SageMath

DELIVERY MODE(S): Lecture/Lab/Seminar

COURSE OBJECTIVES: This course is an introduction to discrete mathematics for reasoning about algorithms and programs. The main topics covered include: propositional and predicate logic, proofs, basic set theory, algorithms, induction and recursion (along with program correctness), functions and relations, and Boolean algebras.

LEARNING OUTCOMES: To demonstrate basic knowledge of set theory, logic and induction, and their use in the practice of reasoning about algorithms and programs. To implement these concepts by writing simple programs in the programming language SageMath/Python

TRANSFERABILITY: Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page http://www.transferalberta.alberta.ca.

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability**

EVALUATIONS:

Assignments	10%
Labs	10%
Quizzes	20%
Midterm	25%
Final Exam	35%

PLEASE READ THE FOLLOWING AND MAKE SURE YOU UNDERSTAND THAT:

Late Assignments will not be accepted. **I will be enforcing this rule with no exception.**

All work must be submitted via myClass or in person ; no emailed assignments will be accepted**.**

Once an assignment has been marked and a grade assigned, I will not be entertaining any request to re-mark it unless a mistake has been made by me.

Exams will be written as scheduled. No rewrites will be given. If there is an excusable absence, the weighting of the missed exam will be added to the final exam weighting. If the absence is not excusable, a grade of 0% will be given. Absences due to a medical emergency must be supported by a physician's letter.

NOTE: YOU MUST GET A PASSING GRADE ON THE TESTING COMPONENT (IE. QUIZZES, MIDTERM, FINAL) OF COURSE FOR YOUR ASSIGNMENT AND LAB MARKS TO COUNT TOWARDS YOUR FINAL GRADE.

GRADING CRITERIA:

Please note that most universities will not accept your course for transfer credit **IF** your grade is **less than C-**.

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100		C+	2.3	67-69
A	4.0	85-94		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE / TENTATIVE TIMELINE:

Week 1	Chapter 1	January 8 -- first day of classes
Week 2	Chapter 1	
Week 3	Chapter 2	
Week 4	Chapter 2	
Week 5	Chapter 3	
Week 6	Chapter 3	
Week 7		
Week 8	TBA	
Week 9	Chapter 6	
Week 10	Chapter 6	
Week 11	Chapter 7	
Week 12	Chapter 7	
Week 13	Chapter 8	
Week 14	Chapter 13	
Week 15	last day of classes	

STUDENT RESPONSIBILITIES: Regular attendance and participation (including homework) is required for the successful completion of this course. If you miss any lecture, it is your responsibility to find out what you missed. Assignments must be handed in on time, and quizzes/exams must be written on the days announced in class or on myClass. If an emergency prevents a student from writing a test/exam on the scheduled day, the student must contact the instructor **BEFORE** the test/exam to make other arrangements. Otherwise, the student will receive a zero grade for that component of the course.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at https://www.nwpolytech.ca/about/administration/policies/index.html.

****Note: all Academic and Administrative policies are available on the same page.**