

DEPARTMENT OF SCIENCE

COURSE OUTLINE – WINTER 2021

CS2720 (A3): Formal Systems and Logic in Computing Science 3 (3-1-1.5) UT, 15 weeks, 82.5 Hours

INSTRUCTOR: Reddy Ganta **PHONE:** 780-539-2850

OFFICE: B301 **E-MAIL:** Rganta@gprc.ab.ca

OFFICE HOURS: TBA

WINTER 2021 DELIVERY:

Remote Delivery. This course is delivered remotely. There are no face-to-face or onsite requirements. Students must have a computer with a webcam, Printer, scanner and reliable internet connection.

Technological support is available through helpdesk@gprc.ab.ca. Note: GPRC reserves the right to change the course delivery.

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: <u>Applied Discrete Structures</u>, 3rd Edition version 5 (2018)
- 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 a programming language such as 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.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	20%
Quizzes	20%
Midterm	25%
Final Exam	35%

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	90-100	C+	2.3	67-69
A	4.0	85-89	С	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
В	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

January 5 first day of classes	Chapter 1	Jan. 5	Week 1
January 12 last day Add or Drop	Chapter 1/2	Jan. 11	Week 2
	Chapter 2	Jan. 18	Week 3
	Chapter 2/3	Jan. 25	Week 4
	Chapter 3	Feb 1	Week 5
	Chapter 3	Feb. 8	Week 6
Winter Break (no classes)		Feb 15	Week 7

Week 8	Feb. 22	Chapter 3	Midterm week
Week 9	Mar 1	Chapter 6	
Week 10	Mar. 8	Chapter 6	
Week 11	Mar. 15	Chapter 7	
Week 12	Mar. 22	Chapter 7	March 29 last day to withdraw
Week 13	Mar. 29	Chapter 8	
Week 14	Apr 5	Chapter 13	
Week 15	Apr 12	last day of classes	
Final Exam Period	Apr. 14-22		

STUDENT RESPONSIBILITIES: Regular attendance and participation (including homework) is required for the successful completion of this course. Assignments must be handed in on time, and quizzes/exams must be written on the days announced in class. If an emergency prevents a student from writing a test/exam on the scheduled day, the weight of that component of the course will be added to the final exam otherwise student receive a score of zero for that part.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

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