JOHN ABBOTT
CEGEP/COLLEGE

General Information.

Discipline: Mathematics   *Course code*: 201-DBC-AB
Ponderation: 2-1-3   *Credits*: 2   *Prerequisite*: None
Program: This course is open to all programs.
Days and Time: Tuesday and Thursday 14:30 - 16:00
Teacher: Philippe Delage   *Office*: H-201
Phone: #5843   *E-mail*: philippe.delage@johnabbott.qc.ca
Office Hours: Monday to Friday 12:00 to 13:00

Students are strongly advised to seek help from their instructor as soon as they encounter difficulties in the course.

Introduction. This complementary course will delve into the world of logic, sets and numbers by asking intriguing questions such as, What does it take for an argument to be valid?, Do all infinite sets have the same size? and What is a number? Students will learn about propositional logic, predicates, sets, relations, cardinality, binary numbers, and much more. Several paradoxes from logic and set theory will be analyzed. This course requires only a knowledge of basic high school math and is open to all students interested in mathematics and logic.

Teaching Methods. This course will be 45 hours, meeting two times per week for a total of three hours per week. The course will rely mainly on the lecture method and problem-solving sessions. The following methods may also be used: question-and-answer sessions, class discussions, and assigned reading for independent study.

Evaluation. A student's Final Grade for this course is a combination of the following components.

3 Tests:	60%
6 Textbook Assignments:	20%
6 Lab Assignments:	20%

Tests will be held on-campus unless the Covid-19 health crisis does not permit it. Textbook assignments consist of the textbook exercises. Lab assignments are done in-class in small groups. The three tests combined compose the final evaluation.

Test Accommodations. Should you need a special accommodation to write the On-Campus Midterm or Final Exam, please read the Math Department's policy.

Required Text. Numbers, Sets and Logic, by Philippe Delage. Available at the college bookstore for about $20.

Course Costs. Apart from the textbook, there are no additional costs.

Other Resources.
Math Website.
http://departments.johnabbott.qc.ca/departments/mathematics

Statement of the Competency. 0012: To use various mathematical concepts and procedures for common tasks.

Elements of the Competency.
1. To demonstrate the acquisition of basic functional knowledge in mathematics.
2. To select mathematical procedures on the basis of specific needs.
3. To use mathematical procedures to carry out tasks and solve problems.
4. To interpret the results obtained using mathematical procedures.

Each of the above elements will be assessed in each of the tests and each of the labs.

Missed Evaluation Policy. A missed evaluation can be made up only if the instructor is informed before the evaluation, the excuse for the absence is justified and verifiable.

Classroom Policy. The use of cell phones, laptops, or similar technology for any purpose that is not directly related to the course is not permitted.

Departmental Attendance Policy. Due to the COVID-19 health crisis, attendance policies may need to be adjusted by your teacher. Regular attendance is expected, and your teacher will inform you of any details or modifications as needed. Please note that attendance continues to be extremely important for your learning, but your teacher may need to define it in different terms based on the way your course is delivered during the fall semester.

Additional Software. In addition to LEA, Teams and Moodle, additional software may be used for the submission of essays or projects or for testing. Further details will be provided if applicable.

Class Recordings. Classes on Teams or other platforms may be recorded by your teacher and subsequently posted on Teams and/or LEA to help for study purposes only. If you do not wish to be part of the recording, please let your teacher know that you wish to not make use of your camera, microphone or chat during recorded segments. Any material produced as part of this course, including, but not limited to, any pre-recorded or live video is protected by copyright, intellectual property rights and image rights, regardless of the medium used. It is strictly forbidden to copy, redistribute, reproduce, republish, store in any way, retransmit or modify this material. Any contravention of these conditions of use may be subject to sanction(s) by John Abbott College.

Course Outline Change. Please note that course outlines may be modified if health authorities change the access allowed on-site.

College Policies.

Policy No. 7 - IPESA, Institutional Policy on the Evaluation of Student Achievement: http://johnabbott.qc.ca/ipesa.

Religious Holidays (Article 3.2.13 and 4.1.6). Students who wish to miss classes in order to observe religious holidays must inform their teacher of their intent in writing within the first two weeks of the semester.

Student Rights and Responsibilities: (Article 3.2.18). It is the responsibility of students to keep all assessed material returned to them and/or all digital work submitted to the teacher in the event of a grade review. (The deadline for a Grade Review is 4 weeks after the start of the next regular semester.)

Student Rights and Responsibilities: (Article 3.3.6). Students have the right to receive graded evaluations, for regular day division courses, within two weeks after the due date or exam/test date, except in extenuating circumstances. A maximum of three (3) weeks may apply in certain circumstances (ex. major essays) if approved by the department and stated on the course outline. For evaluations at the end of the semester/course, the results must be given to the student by the grade submission deadline (see current Academic Calendar). For intensive courses (i.e.: intersession, abridged courses) and AEC courses, timely feedback must be adjusted accordingly.

Academic Procedure: Academic Integrity, Cheating and Plagiarism (Article 9.1 and 9.2). Cheating and plagiarism are unacceptable at John Abbott College. They represent infractions against academic integrity. Students are expected to conduct themselves accordingly and must be responsible for all of their actions.

College definition of Cheating: Cheating means any dishonest or deceptive practice relative to examinations, tests, quizzes, lab assignments, research papers or other forms of evaluation tasks. Cheating includes, but is not restricted to, making use of or being in possession of unauthorized material or devices and/or obtaining or providing unauthorized assistance in writing examinations, papers or any other evaluation task and submitting the same work in more than one course without the teacher's permission. It is incumbent upon the department through the teacher to ensure students are forewarned about unauthorized material, devices or practices that are not permitted.

College definition of Plagiarism: Plagiarism is a form of cheating. It includes copying or paraphrasing (expressing the ideas of someone else in one's own words), of another person's work or the use of another person's work or ideas without acknowledgement of its source. Plagiarism can be from any source including books, magazines, electronic or photographic media or another student's paper or work.

Learning Objectives. ("A student is expected to ...")

Logic

1.1 Recognize different types of paradoxes.
1.2 Formulate propositions using logical connectives.
1.3 Construct a truth table for a proposition.
1.4 Determine if a given argument is valid.
1.5 Recognize and use logical arguments.
1.6 Simplify propositions.
1.7 Formulate propositions using predicates and quantifiers.

Set Theory

2.1 Perform operations on sets.
2.2 Use algebraic properties of sets to simplify expressions.
2.3 Describe relations using n-tuples.
2.4 Determine if a relation is an equivalence relation.
2.5 Determine if a relation is an order relation.
2.6 Determine if a function is injective, surjective or bijective.
2.7 Compare the cardinality of different sets of numbers.

Number Systems

3.1 Convert numbers between decimal and binary notation.
3.2 Perform arithmetic operations in binary notation.

Tentative Timetable.

Day	Content	Learning Objective(s)	Due Date
1	Lecture	1.1	
2	Lecture	1.1	
3	Lecture	1.2	**Assignment 1**
4	**Lab 1**	1.1	
5	Lecture	1.3	
6	Lecture	1.4	
7	Lecture	1.5	**Assignment 2**
8	**Lab 2**	1.2 - 1.5	
9	Lecture	1.6	
10	**Test 1**	1.1 - 1.5	
11	Lecture	1.6	
12	Lecture	1.7	
13	Lecture	2.1	**Assignment 3**
14	**Lab 3**	1.5 - 1.7	
15	Lecture	2.2	
16	Lecture	2.3	
17	Lecture	2.4	**Assignment 4**
18	**Lab 4**	2.1, 2.2	
19	Lecture	2.4	
20	**Test 2**	1.5 - 1.7, 2.1, 2.2	
21	Lecture	2.5	
22	Lecture	2.6	
23	Lecture	3.1	**Assignment 5**
24	**Lab 5**	2.3 - 2.6	
25	Lecture	3.2	
26	Lecture	2.7	
27	Lecture	2.7	**Assignment 6**
28	**Lab 6**	2.7, 3.1, 3.2	
29	Lecture	2.7	
30	**Test 3**	2.3 - 2.7, 3.1, 3.2	