UNIVERSITY of VIRGINIA

UVA IN VALENCIA PROGRAM

CS 2120 DISCRETE MATHEMATICS & THEORY 1

I. COURSE DESCRIPTION

This course is roughly structured around 4 units, with the following themes:

1. Discrete Structures: sets, logic, equivalence proofs
2. First-order Logic: predicates, quantifiers, functions, relations
3. Proofs: contradiction, integers, induction
4. Combinatorics, Logarithms and Finite State Machines (FSMs) if time allows

II. GRADING SCALE AND BREAKDOWN

Students will be awarded grades according to the UVA grading scale:

A 10-9	**B+** 7,9-7	**C** 5,4-5	**F** 4,9-0
A- 8,9-8	**B** 6,9-6		
	B- 5,9-5,5		

Grade Breakdown

Worksheet Unit 1	7.5%
Worksheet Unit 2	7.5%
Worksheet Unit 3	7.5%
Worksheet Unit 4	7.5%
Midterm Exam	30%
Final Exam	30%
Daily Work and Participation	10%

Worksheet Unit (30%)

During some class meetings, at the end of each unit, you will be asked to work to complete an in-class worksheet. Learning through completing worksheets is intended to give you a more hands-on learning experience than a traditional lecture can provide on its own. These worksheets will be completed in assigned pairs, which will change weekly. Working in pairs will help give you practice with discussing your thought process, which is a skill you'll need in the future.

Midterm exam (30%)

To gauge your individual understanding of the material, you will be given one midterm test during the semester. Problems on the test will consist of some basic computation questions as well as some more conceptual questions. You will be allowed a short formula sheet for each test. Specific instructions on this formula sheet will be given when the test is close.

Final exam (30%)

To gauge your individual understanding of the material, you will be given one final exam. Problems on the test will consist of some basic computation questions as well as some more conceptual questions. You will be allowed a short formula sheet for each test. Specific instructions on this formula sheet will be given when the test is close.

Daily work and participation (10%)

Students are expected to comply with the assigned work plan daily. Coming prepared to class is essential to the learning process.

The following rubric is important regarding participation grades:

A The student always prepares the class and complies with the work plan assigned daily; he/she participates voluntarily and frequently, works well as a team, and contributes positively to the classroom environment.

B The student participates voluntarily and frequently by answering questions from the teacher

C The student participates sporadically when the teacher asks, and he/she/they occasionally ask questions.

D The student does not try to participate, or minimum work is done.

F The student is absent and shows disrespect to other peers and to the professor.

III. BIBLIOGRAPHY AND MATERIALS

This class won't be following a specific textbook. All the materials will be given to the students.

IV. COURSE PLANNING AND CALENDAR

DATES	CONTENTS
27-10 (17:30-19:30)	MIDTERM EXAM
14/15/16 DEC	FINAL EXAM (Official Schedule)

08-SEP	SETS
10-SEP	SETS
15-SEP	POWERSETS AND DISJOINT SETS
17-SEP	PROPOSITIONAL LOGIC AND TRUTH TABLES
22-SEP	EQUIVALENCE PROOFS
24-SEP	WORKSHEET UNIT 1
29-SEP	QUANTIFIERS
01-OCT	NESTED AND DEMORGANSING QUANTIFIERS
06-OCT	ENTAILMENT WITH QUANTIFIERS
08-OCT	RELATIONS
20-OCT	WORKSHEET UNIT 2
22-OCT	SIMULACRUM MIDTERM EXAM
27-OCT	MIDTERM EXAM
29-OCT	REVIEW MIDTERM EXAM
03-NOV	FUNCTIONS
05-NOV	FUNCTIONS
10-NOV	FUNCTIONS AND ENTAILMENT
12-NOV	PROOF BY CONTRADICTION
17-NOV	CONTRADICTION
19-NOV	CUMULATIVE OPERATORS
24-NOV	WORKSHEET UNIT 3
26-NOV	PROOF BY INDUCTION
01-DEC	COMBINATORICS
03-DEC	LOGARITHMS
10-DEC	WORKSHEET UNIT 4
11-DEC	SIMULACRUM FINAL EXAM
14/15/16	**FINAL EXAM (Official Schedule)**

IMPORTANT INFORMATION

1) Use of Spanish at the Center

The use of Spanish at the Center is strongly encouraged. Remember that you have come to Spain to learn Spanish and immerse yourself in its culture, and there is no better way to do so than by using Spanish on as many occasions as possible.

2) Class Attendance and Tardiness

2.1) Attendance and punctuality are essential for the successful completion of the course. Consequently, unexcused absences and lateness will negatively affect the final grade.

2.2) Only one unexcused absence is permitted. Please bear this in mind when planning trips or outings.

2.3) Arriving more than 5 minutes late to class will count as half an absence (1/2). It is the student's responsibility to notify the instructor of an absence before the class begins.

2.4) Arriving more than 30 minutes late to class will be considered an absence.

2.5) Four (4) unexcused absences will result in the student not receiving credit for the course.

2.6) Only documented absences will be considered excused: a religious holiday, a family emergency, or a medical appointment. Medical absences must be supported by a doctor's note and submitted at reception on the day the student returns to class after the incident has ended.

3) Academic Integrity

3.1) The exchange of information is not only permitted but is also a way of enriching the knowledge acquired during the course. However, all work submitted for each course must be individual and original in every respect. Any sources and direct quotations used must be properly cited.

3.2) Remember that the use of artificial intelligence to complete assignments or examinations is strictly prohibited unless an instructor expressly states otherwise. Such use constitutes a lack of authenticity, and may amount to direct plagiarism, in addition to undermining the development of critical thinking and writing skills, which are among the primary goals of this program. Failure to comply with this rule will result in a grade of "F" for the course.

3.3) Any work that has received credit for one course will NOT be accepted for credit in another course. There will be NO exceptions to this rule. Reusing such work will result in immediate failure of the second course. If assignments for two different courses are related in any way and the student has questions about whether the second project is permissible, the matter must be discussed with all instructors involved. This will prevent any possible unintentional violation of this rule.

3.4) As with punctuality, assignments must be submitted on time. Any late submission will result in a reduction of the grade for that assignment.

3.5) Failure to comply with the provisions set out above will result in the loss of the corresponding course credits for the course in which these rules have been violated.

3.6) If you have a documented special need that requires academic accommodations (SDAC), it must be certified by your home institution. Please contact the Head of Studies in Valencia, María Andrés (maria.andres@uvavalencia.org).

4) Activities, Workshops, and Lectures

Throughout the course, various activities, workshops, and lectures are organized. Participation may be voluntary or mandatory if the instructor considers the activity relevant to the course.

5) Classroom Conduct

5.1) It is very important that all students arrive to class on time, prepared, and with the materials needed for the day. During class, students must treat one another and the instructor with respect, demonstrate a positive attitude, and help create a participatory and collaborative environment that supports effective learning. Any violation of these expectations will have direct consequences.

5.2) Electronic devices (laptop, mobile phone, smartwatch) may be used in class only for course-related purposes. If a student uses such technology for personal reasons during class, the student may be penalized with an unexcused absence.

5.3) The use of computer or electronic technology during examinations is prohibited unless the instructor determines otherwise in accordance with the examination format.

6) Course Content

On occasion, and always within the context of the course, certain “sensitive” topics may be addressed both inside and outside the classroom. Therefore, if a student feels offended by such content in a particular class, the student may leave the class, and doing so will not have any negative effect whatsoever on the final grade. Faculty members will always be open to communication and dialogue in order to promote better intercultural understanding.

7) Final Clarification

The instructor may modify or add activities and/or change the dates indicated according to the learning needs of the group. Effective learning requires not only careful planning, but also a certain degree of flexibility.