

Discrete Mathematics - Course Syllabus

Course Number: AMCS 162

Course Title: Discrete Mathematics

Academic Semester: Spring

Academic Year: 2015/ 2016

Semester Start Date: Jan, 24, 2016

Semester End Date: May, 19, 2016

Class Schedule: Sunday 4:00-5:30, Wednesday 4:00-5:30

Classroom Number:

Instructor(s) Name(s): Jean-Marie Morvan

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Teaching Assistant name:

Email:

Office Location: 2301 bd 1

COURSE DESCRIPTION FROM PROGRAM GUIDE

This course covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, and counting principles.

COMPREHENSIVE COURSE DESCRIPTION

This course provide an elementary introduction to discrete mathematics. Topics include: Elements of logic, set theory, combinatorics, algorithms, graph theory, Boolean algebra, sum and asymptotics.

GOALS AND OBJECTIVES

At the end of this course, students should:

- use correctly the classical notions of logic : implications, equivalence, negation, proof by contradiction, proof by induction, quantifiers.
- use set theory : union, intersection, complementary, maps, bijection, injection, surjection.

- know the main formulas in combinatorics : enumerations of subsets, enumerations of injections, surjections, bijections.
- know some elementary algorithms : searching algorithms, sorting, greedy algorithms, and their complexity.
- know the main definitions, some classical theorems on graphs and apply graphs in concrete situations.

REQUIRED KNOWLEDGE

- Elementary knowledge in calculus is needed : polynomial, logarithm map, exponential map.

REFERENCE TEXTS

- Discrete Mathematics, second edition, Norman L. Biggs. This book is in the library.
- The notes on the course.

METHOD OF EVALUATION

Percentages %	Graded content (Assignments, Oral quizzes, Projects, Midterm exam, Final Exam, Attendance and participation, etc)
	<ul style="list-style-type: none"> - 10 % Graded homework, - 20 % Quizzes - 20 % Exam 1 - 20 % Exam 2 - 30 % Final exam

COURSE REQUIREMENTS

Assignments

- **Homework and quizzes** : There will be homeworks and/or quiz every week. The quizzes will be closed books and closed notes, at the beginning or the end of a class. This implies that it is important that the students attend all classes and be on time. Solutions of the problems will be provided. Collaboration for the homeworks is allowed and encouraged, but copying homework is of course not tolerated. The rules are the following : each student must first attempt to solve the problem. If a student gets stuck, he or she can talk to any other student of the class about the problem, but the solutions cannot be exchanged. The final answer must be written by the student alone, and it must be fully understood.
- **Exams** : There will be three exams during the term, closed books and closed notes.

Course Policies

All homework assignments, quizzes, and exams are required. Students who do not show up for a Quiz or an exam should expect a grade of zero on that exam.

If you dispute your grade on any homework, quiz, or exam, you may request a re-grade (from the TA for the homeworks and quizzes or from the instructor for the exams) only within 48 hours of receiving the graded exam. Incomplete (I) grade for the course will only be given under extraordinary circumstances such as sickness, and these extraordinary circumstances must be verifiable. The assignment of an (I) requires first an approval of the dean and then a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements.

Additional Information

Engineers are required to practice “continuous” or “life-long” learning. Although the instructor and the TAs are committed to help the students in this course, the students are also expected to take initiatives and to get used to this notion of self-study that will be anyway (i) expected from them in their future careers and (ii) imperative to their success and survival in the real engineering and academic worlds.

NOTE

The instructor reserves the right to make changes to this syllabus as necessary.