

Sections 5-6-7-401

**Syllabus* for MA 111 – Introduction to Contemporary Mathematics,
Fall 2007**

Section Number, TR, Time, Place

Instructor: Name, Office, Phone, Email

Departmental office: OT 719, 257-3336

Instructor office hours: Day, Time, Place

Textbook: *The Mathematical Palette*, 3rd ed., by Ronald Staszko and Robert Bradshaw, Brooks/Cole - Thomson Learning, 2005, ISBN 0-534-40365-4

Material to be covered: In this course, we will discuss five topics covered by chapters 2, 3, 4, 7 and 9 from the book. By the end of the semester students should understand some of the basic elements of mathematics that are used in a modern society such as logical thinking, sets and counting, probability, geometry, and finance matters. More specifically, first we will discuss some basic ideas about premises and conclusions, explore methods of logical argument, analyze truth tables and flowcharts, and use logic to help solve puzzles. Second, we will become familiar with sets, their operations such as unions and intersections, their representations by Venn diagrams, and their applications to counting problems. Third, we will learn how mathematical rules based on set theory can be used to answer probability questions drawn from areas such as games of chance, employment statistics, consumer buying habits, and medicine. Fourth, we will have a short journey through geometry such as the golden ratio, polygons, tessellations, and fractals. At the end, we will learn how to do basic finance calculations such as simple or compound interest, annuity, and loan payment.

Grading: You can earn up to 500 points in the course based on the following activities:

4 exams	400 (100 points each)
Homework	40
Quizzes	40
Attendance	20
Total	500

Your course grade will be based on the following scale:

450-500	400-449	350-399	300-349	0-299
A	B	C	D	E

Your solutions will be graded for mathematical correctness, and for clarity of exposition. Students who wish to receive full credit should write in complete sentences laying out the arguments carefully.

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Exams: There are four exams. The last exam will not be cumulative. Make-up exams are given only if prior arrangements are made.

- Exam 1: Room, Sep. 20, Time
- Exam 2: Room, Oct. 25, Time
- Exam 3: Room, Nov. 15, Time
- Exam 4: Room, Dec. xx, Time

Homework and quizzes: There are twelve homework assignments and fifteen quizzes worth 4 points each, but only the best ten of each type will count towards the final grade. Each assignment consists of odd numbered problems to be discussed in class and even numbered problems to be handed in at the end of the class. From each assignment only an unspecified subset of problems will be graded. There are **no make-up** assignments or quizzes. We recommend you start to work on an assignment as soon as the corresponding material is discussed in class. Also you can get together with classmates to work on the problems. At the end it would be best for your understanding if you put aside your notes and wrote up the solutions entirely from scratch.

Attendance: It is compulsory and it will be checked indirectly by awarding one point towards the final grade for each homework assignment and quiz handed in class. Failing to do so will count as zero. You can earn up to 7 bonus points towards the final grade by handing in all the twelve assignments and all the fifteen quizzes.

Help: If you are having difficulties or concerns with any aspect of the course, you should seek help or communicate your concerns immediately. Your instructor and in special cases, the course coordinator are happy to assist you. You can also seek help in the Mathskeller, see www.mathskeller.org.

Academic honesty: Students are encouraged to work together to understand a problem and develop a solution. However, the solution you submit for credit must be your own work. In particular you should write your solutions independently. Copying on exams and usage of books, notes or advanced calculators[†] during examinations is not allowed. Cheating or plagiarism is a serious offense and it will not be tolerated.

Caveat: Changes to this syllabus will be made by consensus only if needed.

[†] Such as TI-89, TI-92, HP-48 etc.

Calendar for MA 111, fall 2007

Date	Lecture	Assignment	Problem session	Due
Aug 23	2.1 Logic, Statements and Definitions	7, 9, 15, 17, 19, 21, 23, 27, 29, 31, 33, 41, 43, 45, 49, 51, 61; (10, 16, 22, 26, 30, 32, 42, 50)		
Aug 28	2.2 Inductive and Deductive Reasoning	9, 11, 15, 19, 23, 25, 33, 35, 37; (10, 12, 16, 18, 20, 24)	2.1	
Aug 30	2.3 Symbolic Logic and Truth Tables	7, 9, 11, 13, 17, 19, 21, 23, 25, 27, 29; (8, 10, 18, 22, 26, 28)	2.2	Quiz 2.1 HW 2.1, 2.2
Sep 4	2.4 Logic and Flowcharts	9, 11, 15, 17, 19; (8, 10, 16, 20)	2.3	Quiz 2.2
Sep 6	2.5 Logic and Puzzles	9, 11, 13, 17, 19, 21, 23, 25, 31; (10, 12, 18, 22, 24, 30)	2.4	Quiz 2.3 HW 2.3, 2.4
Sep 11	3.1 Finite and Infinite Sets	11, 13, 15, 17, 19, 21, 27, 29; (12, 14, 16, 18, 20, 26, 30)	2.5	Quiz 2.4
Sep 13	3.2 Set Operations and Venn Diagrams	9, 11, 13, 17, 19, 21, 25, 27, 29; (10, 12, 18, 20, 22, 26)	3.1	Quiz 2.5 HW 2.5, 3.1
Sep 18	Review		3.2	HW 3.2
Sep 20	Exam 1, Room, Time			
Sep 25	3.3 Applications of Sets	7, 9, 11, 13, 17, 19, 23, 27; (8, 10, 12, 14, 18, 20, 22, 24)		
Sep 27	3.4 Introduction to Counting	9, 11, 13, 15, 17, 23, 25, 27, 31, 35, 39, 41; (10, 12, 14, 16, 24, 26, 28, 30, 38, 40, 42, 46)	3.3	
Oct 2	4.1 Intuitive Concepts of Probability	13, 15, 17, 19, 21, 23; (12, 14, 16, 18, 22, 24)	3.4	Quiz 3.3 HW 3.3, 3.4
Oct 4	4.2 Calculating Probabilities	5, 7, 9, 11, 13, 19, 21, 23; (6, 8, 10, 12, 14, 18, 20, 22, 24)	4.1	Quiz 3.4
Oct 9	4.3 Probability and Odds	7, 9, 11, 13, 15, 17; (8, 10, 12, 14, 16, 18)	4.2	Quiz 4.1 HW 4.1, 4.2
Oct 11	4.4 Probability and Compound	7, 9, 11, 13, 15, 19, 21, 23, 27, 29, 31; (8, 10, 12, 14, 16, 20, 22, 28, 30, 32, 34, 38)	4.3	Quiz 4.2
Oct 16	4.5 Conditional Probability	7, 9, 11, 13, 15, 17, 19, 21, 23; (8, 10, 12, 16, 18, 20, 24, 26)	4.4	Quiz 4.3 HW 4.3, 4.4

Oct 18	4.6 Expected Value	9, 11, 13, 15, 19, 21; (8, 10, 12, 14, 16, 18, 20, 22)	4.5	Quiz 4.4, 4.5
Oct 23	Review		4.6	HW 4.5, 4.6
Oct 25	Exam 2, Room, Time			
Oct 30	7.3 Golden Ratios and Rectangles	1, 3, 5, 11, 13, 15, 19, 23, 25, 33; (2, 4, 10, 14, 16, 18, 22, 24, 34)		
Nov 1	7.4 Polygons and Stars	1, 3, 7, 11, 13, 15, 21, 25, 29, 39; (2, 6, 8, 22, 26, 34, 40)	7.3	
Nov 6	7.5 Tessellations	1, 3, 11, 15, 21, 25, 27, 29; (4, 12, 16, 18, 24, 26, 28)	7.4	Quiz 7.3 HW 7.3, 7.4
Nov 8	7.6 Fractals	1, 3, 5, 11, 13, 15, 19, 21; (2, 4, 10, 12, 14, 16, 20, 22)	7.5	Quiz 7.4
Nov 13	Review		7.6	HW 7.5, 7.6
Nov 15	Exam 3, Room, Time			
Nov 20	9.1 Percents	11, 13, 15, 19, 21, 23, 27, 29, 31; (10, 12, 14, 18, 20, 22, 26, 28, 30, 32)		
Nov 27	9.2 Simple Interest	7, 9, 11, 13, 17, 19, 23, 25; (8, 10, 12, 14, 18, 20, 22, 24, 26, 28)	9.1	
Nov 29	9.3 Compound Interest	9, 11, 13, 15, 17, 19, 21, 25, 29, 31, 33; (10, 12, 14, 16, 18, 20, 22, 26, 28, 30, 32)	9.2	Quiz 9.1 HW 9.1, 9.2
Dec 4	9.4 Annuities	5, 7, 9, 11, 13, 15, 17, 19; (6, 8, 10, 12, 14, 16, 18, 20)	9.3	Quiz 9.2
Dec 6	9.5 Loans	7, 9, 11, 15, 19; (8, 10, 12, 16, 20)	9.4	HW 9.3, 9.4
Dec xx	Exam 4, Room, Time			