MA 3025 (4-1) Logic and Discrete Mathematics I
Fall 2015

Class time: Mon-Thu: 11:00-11:50 a.m., Mon 12-12:50pm, in 104 Spanagel

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Office Hours : Mon-Thu 9-9:50am (or by appointment) in 260 Spanagel.


Homework: Regular homework assignments will be made but none will be collected. Homework will be posted on line.

Make-up policy : There will be absolutely no accepting of late or make-up assignments. If you know you will be missing school, you can take the quiz ahead of time, if you let me know two days before the quiz will be given. If you cannot attend the Exams, a makeup will be given only if you have informed me of your expected absence no later than 2 class periods preceding the test. For sudden illness and accidents, please see me upon your return to class.

Grading: Your final grade is the average of your 3 exams (100 points each). The tentative exam dates are: Oct 23rd, Nov 13th, Dec 10th.

Course Description: MA3025 is the second in a two-course sequence designed to provide a foundation in logic and elementary discrete mathematics. The course is useful for students from a number of disciplines. The emphases are twofold: the course begins with a rapid review of “naive” propositional and first-order predicate logic, which is covered in depth in MA2025. Following this review, we extend the coverage of some topics introduced in MA2025 and introduce new topics that do not appear in the previous course. The study of the integers resumes with the extended Euclidean Algorithm, which leads to solutions of linear congruences, the Chinese Remainder Theorem. We then extend the introduction to counting begun in MA2025, to include the Binomial Theorem, combinatorial proof, generalized permutations and combinations, and the principle of inclusion-exclusion. The balance of the syllabus is on new topics. First is an introduction to recurrence relations. Coverage is limited to linear, constant-coefficient recurrence relations and the method of characteristic roots. After a brief digression to review the bare fundamentals of matrix arithmetic, including
Boolean operations on 0:1-matrices, we introduce relations. Covered are the fundamental properties of relations, representation using matrices and digraphs, closures, and the special cases of equivalence and partial order relations. We conclude the quarter with the basics of graphs and trees in graph theory. The sections that we will cover in this class are listed at: http://faculty.nps.edu/rgera/MA3025/Fall2015/home.html