Title: **Number Theory**
                    (MAS 4203, Section U01B, Class Number 56494, Summer B 2006)
Instructor: Mirroslav Yotov; Department of Mathematics, FIU;
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Time: MTuWTh 2:00 p.m.-3:15 p.m.
Place: DM 409B
Office Hours: MTuWTh 3:30 p.m. – 4:30 p.m., DM 342B.

Book: Joseph Silverman, "A Friendly Introduction to Number Theory",
                 Third Edition, Prentice Hall.

Description of the course (syllabus):

Our motivation in this course will be to learn how to solve certain types of equations in integers (most notably the Pythagorean equation $x^2 + y^2 = z^2$ where the unknowns should be integers). We will start our journey into the theory of integers by finding formulae for the solutions to this equation, and the last stop will be the characterization of all z which can be part of such a solution. Meanwhile, we will significantly develop the theory of integers. Some of the topics we will cover are: Fundamental Theorem of the Arithmetic of Integers, Congruences (we will fully develop the theory of linear congruences, will get far enough into the theory of congruences $x^k = a \pmod p$ introducing the primitive roots and indices, will fully develop the theory of quadratic congruences including Gauss' Quadratic Reciprocity Law), Basic Arithmetic Functions, Special Prime Numbers, Perfect Numbers, Amicable Numbers, "Unbreakable" Codes, and much more.

Formally, we will cover chapters 1 through 28. The book is written in a friendly manner, but needs effort in reading and understanding it. Portions of the material will be left for reading by the students at home. After every chapter covered, there will be a homework assignment posted. Some of the problems from those assignments will be graded (there will be four such "turn-in" assignments). There will also be performed three Quizzes, two Midterms and a Final Exam following this timetable:

 Quiz #1 on July 6th, Midterm #1 on July 13th, Quiz #2 on July 20th, Midterm#2 on July 27th, Quiz #3 on August 3rd, Final Exam on August 10th.

There will be three review sessions during the classes immediately before the Exams.

 In forming the overall grade, the lowest graded quiz will be dropped out from consideration.

Grading policy:

The overall grade of the students will be formed by taking
                    15% of the HW grades
                    15% of the Quizzes' grades
                    30% of the average of the Midterms' grades
                    40% of the Final Exam grade.

Example: Suppose a student has A points total on the HW, B points total on the Quizzes, C points total on the Midterm Exams, and D points on the Final Exam. Suppose further that the maximal possible points one can get on these are A', B', C', and D' respectively. Then, one can compute a number S by

the formula
S = [10*A + 20*B + 15*C + 40*D] / [10*A' + 20*B' + 15*C' + 40*D'].

The overall grade of the student above is determined now by the scale:

$0.92 < S$: A	$0.89 < S < 0.92$: A-	$0.86 < S < 0.89$: B+
$0.78 < S < 0.86$: B	$0.75 < S < 0.78$: B-	$0.71 < S < 0.75$: C+
$0.62 < S < 0.71$: C	$0.58 < S < 0.62$: C-	$0.55 < S < 0.58$: D+
$0.49 < S < 0.55$: D	$0.46 < S < 0.49$: D-	$S < 0.46$: F

Make-up exams: No make-up exams will be given.