# NUMBER THEORY—COURSE SYLLABUS—SPRING 2013—DR. FADYN

Textbook: “Elementary Number Theory and its applications”, Sixth Edition By Kenneth H. Rosen. Addison Wesley Longman Publishers. ISBN: 0-321-50031-8.

Appendix A: Axioms for the Set of Integers (lite coverage)

Chapter 1: The Integers: 1.1—1.5. (1.1—1.3 are review and will be done quickly).

Appendix B: Binomial Coefficients (lite coverage)

Chapter 3: Primes and Greatest Common Divisors: 3.1—3.7.

Chapter 4: Congruences: 4.1—4.3.

Chapter 6: Some Special Congruences: 6.1, 6.3.

Chapter 7: Multiplicative Functions: 7.1-7.3.

Chapter 8: Cryptology: 8.1, 8.2, 8.4.

Chapter 9: Primitive Roots: 9.1—9.4.

Chapter 11: Quadratic Residues: 11.1—11.3.

In addition to the sections above, we will do several additional sections from our text. These sections will be covered during student group presentations. Also, we may be fortunate enough to have a guest lecture or two from members of our mathematics and physics departments. Material covered during student group presentations are definitely fair game for tests and/or final exam. In addition, questions about topics covered by any guest lecturers may also appear on tests and/or the final exam.

I would like to keep this syllabus as flexible as possible. With this in mind, if time becomes short, we may have to trim a few of these sections , probably those in Chapter 9. Since this syllabus is rather ambitious, this is, perhaps, a likely scenario.

Homework: Homework will be assigned from each section as we cover it. Needless to say, it is essential that you keep up with the work in this course. We will discuss homework problems in class on an as-needed basis, but we certainly won’t have time to do them all in class!

Course Policies: Critical information concerning grade determination, calculator policy, office hours, withdrawl dates etc. is included in the “COURSE POLICIES” section of this syllabus. Be sure to read that section carefully!

NUMBER THEORY—COURSE POLICIES—DR. FADYN—SPRING 2013

Office: D-217 (jfadyn@spsu.edu)

Phone Numbers: (770)-528-7416 (Office); (770)-528-7235 (Math. Dept.)

Office Hours: To Be Announced.

HOMEWORK: Homework will be assigned each class period and should be completed by the next class meeting. Completion of homework assignments is essential for success in this course.

ATTENDANCE: Regular class attendance is expected of every student. Poor attendance almost invariably leads to poor grades. You are held responsible for all material covered and all announcements, changes, etc. made during each class period whether or not you attend the class.

CALCULATOR: The TI-89 calculator is strongly recommended for this class. Students not using the TI-89 should be sure that the calculator they have has number theoretic functions such as mod, floor, etc.

GRADE DETERMINATION: Individual in-class testing will consist of Quizzes, a Mid-Term Exam and a Final Exam and NO MAKE-UP QUIZZES/TESTS WILL BE GIVEN. In addition there will be a group presentation and group work with Maple involved. The breakdown is as follows:

Quizzes: 25% ; Mid-Term: 25%; Final: 25%; Group Presentation: 15%; Group Work With Maple: 10%.

More details on the Group Presentation and the Maple Group Work will be forthcoming.

GRADING: Normally, grades will not be "curved" and the standard grading scale below will be used to determine your final grade:

A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: below 60

Disabilities Statement: Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the counselor working with disabilities at (770)528-7361 as soon as possible to better insure that such accommodations are implemented in a timely fashion.

Last day to withdraw with a grade of "W": Tuesday Feb. 26, 2013.

Final Exam Date & Time: To Be Announced: Will occur during the period: May 1—May 7.

# NUMBER THEORY—GROUP PRESENTATIONS—SPRING 2013—DR. FADYN

Groups are to consist of 2 or 3 people each unless otherwise approved by the instructor.

By January 31, you must hand in the names of the people in your group, and the section in our text that you want to cover.

Sections must be approved by the instructor. Some advice: Don’t choose a section in the middle of a chapter we won’t be covering in class. For example, don’t pick, say, section 12.3, because we won’t be doing this chapter and the class won’t have the necessary prerequisite knowledge to understand this section. Of course, if you can coordinate with one or more other groups to do the prerequisites as their sections, then that should be fine. There are of course exceptions to this rule. For example, most of the sections in Chapter 5 (Applications of Congruences) are fairly independent of one another, so we could do 5.2 (say) without doing 5.1 first. In case two or more groups choose the same section, I’ll give it to the group that asks for it first (in writing). If there is a “tie”, we’ll decide it by coin toss.

Here are the guidelines we will follow for the group presentations. I’ll grade on the basis of 100 points with this breakdown:

A. You will need to hand in (at the presentation) about 4 or 5 even numbered homework problems from the section in the text you’ll be presenting. These are problems that will be assigned by the instructor, of course! (60 points).

B. You will need to hand in (at the end of your presentation) detailed lecture notes containing the material, examples, etc. that you covered (or intended to cover!) in your presentation. (15 points).

C. I will give you a grade on the quality of your presentation. Everyone in the group must present some part of the material…Perhaps one person may state/prove a theorem, and another may do an example of it, etc. (15 points).

D. You must assign 5 (or more) odd-numbered homework problems from your section (from our text) for the class to do for our next meeting. You are responsible for answering any questions from the class or instructor on these problems at the beginning of the next class. (10 points).

Keep in mind that if your group chooses a section near the beginning of the text, you will likely be doing your presentation sooner than a group who chooses one further along in our text. The instructor will schedule the dates of presentations for all groups. I expect that they will be at various times during the semester. They probably won’t all be at the end of the course!