

MATH 312-201, INTRODUCTION TO NUMBER THEORY

Time and Place: MWF 9:00am-10:00am. Room Frederic Lasserre, 104.

Instructor: Angelos Koutsianas.

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Office hours: Monday 15:00-17:00 and Thursday 14:00-15:00 in LSK300B. Otherwise arrange an appointment by email.

Topics: In this course we give an introduction to the very interesting and rich area of mathematics that studies the properties of integer numbers. In more details, we study prime numbers, gcd and lcm, the Fundamental Theorem of Arithmetic, the Euclidean algorithm, congruence arithmetic, multiplicative functions, quadratic reciprocity, continued fractions and Diophantine equations. We will also mention the main mathematical ideas of public-key cryptography and RSA cryptosystem.

Homework: Homeworks will be posted weekly.

Exams: There will be two midterm exams: on Wednesdays, January 30th and March 6th, during class hours. The final exam will be announced later.

Evaluation: Your final mark is calculated as follows,

- 50% = final exam,
- 40% = two midterms,
- 10% = extra homework.

Bibliography: The literature of the topics we will cover is very rich and there are plenty of very good books. However, we recommend the following notes/books:

- *'Math312 - An Introduction to Number Theory'*, Nuno Freitas and Adela Gherga (textbook).
- *'Elementary Number Theory and its Applications'*, Kenneth H. Rosen.
- *'A Friendly Introduction to Number Theory'*, Joseph H. Silverman.