

**MATH 317: ELEMENTARY NUMBER THEORY**

**FALL 2022-2023**

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Lectures: Monday: 08:40-10:30 in FENS L063

 Tuesday: 09:40-10:30 in FENS L063

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Office Hours: TBA

**You are responsible for every announcement made in class or in SUCourse+. Not attending the class or not following SUCourse+ regularly is not an excuse, in case you miss something.**

**TEXTBOOK:** A Friendly Introduction to Number Theory, by Joseph H. Silverman, Fourth Edition-ISBN: 978-0-321-81619-1 2012 Pearson Education, Inc.

**PREREQUISITES:** MATH 102 and MATH 201.

**COURSE DESCRIPTION:** MATH 317 is an introductory course to Number Theory. Much emphasis is put on problem solving and writing rigorous mathematical proofs. Throughout this course, you are expected to be able to:

• Read, understand and construct rigorous mathematical proofs, e.g., mathematical induction, direct and indirect proofs

• Present mathematical work, both in oral and written format, to various audiences

(mathematicians, and non-mathematicians).

**The course covers the following topics, and it is subject to change.**

1) Divisibility of integer numbers and the Euclidean algorithm

2) The Fundamental Theorem of Arithmetic

3) Multiplicative arithmetic functions and interesting numbers: perfect numbers, Fermat numbers and Mersenne numbers

4) Congruences and polynomial congruences

5) Chinese Remainder Theorem

6) Primitive roots

7) Quadratic residues, Jacobi symbols and Quadratic reciprocity

8) Pseudoprimes

9) Pythagorean triangles

**GRADING:** Your grade depends on the following listed items. There will be no otherextra-credit opportunities.

• Two Midterms: 30% each

• Final Exam: 40%

Midterm 1: Saturday 05.11.2022

Midterm 2: Saturday 10.12.2022

Final: TBA

**Is there anything I need to know for exams?**

1) You must SHOW ALL YOUR WORK on exams. Unsupported answers are considered miracles and, while inspirational, will receive little or no credit.

2) Graded exams will be returned to you as soon as possible.

**CLASSROOM DISCIPLINE:** It is our responsibility to provide students with excellent learning environments. We are therefore asking you to please respect both our responsibility to teach and the right of other students to learn. Any action that disturbs your classmates or interrupts the lecture is unacceptable. The following rules must be followed in all classes:

1. Classes will start on time. By coming to a class late, you will lose important material

and announcements.

2. If you are unable to attend a class, you are responsible to find out what you have

missed.

3. You are responsible for every announcement made in class or on SUCourse+.

**NA POLICY:** Students missing two exams (out of three), will receive NA. If you will have serious issues preventing you from regularly following the course, you are required to contact your instructor.

**MAKE-UP EXAMS:** If you miss a Midterm/Final and wish to make it up, you must contact your instructor by mail, and explain your excuse as soon as possible. Only students that had contacted the instructor with a valid documented excuse will be contacted to arrange the terms of the exam.

**ACADEMIC INTEGRITY:**All university policies on academic integrity apply to our course, and they will be enforced.

(more information: http://www.sabanciuniv.edu/en/academic-integrity-statement)

In particular, no form of cheating is welcome in the exams, such as copying whole or part of each other's answers, using cheat-sheets, etc. The action against such violations could range from getting a zero on the particular exam to explaining the case in front of the Disciplinary Committee.