

SABANCI UNIVERSITY, Spring 2021
MATH 68005 - Special Topics (Analytic Number Theory)

Lecturer: Kağan Kurşungöz
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Office: FENS 2010
Office Hours: Online, by appointment.

Class Hours: M 10:40 - 11:30, W 8:40 - 10:30.
Zoom links to lectures will be announced before each block of lectures.

Textbook: Tom M. Apostol, "Introduction to Analytic Number Theory", Springer.

Learning outcomes: Upon completion of the course, student should be able to

- 1 - Use arithmetical functions and the relations between them.
- 2 - Calculate averages of various arithmetical functions.
- 3 - Understand some elementary theorems on the distribution of primes.
- 4 - Understand characters of finite abelian groups and the related L-functions.
- 5 - Know basics of Dirichlet series and Euler products.

Topics: I will assume familiarity with handling congruences, and some complex analysis.

(as time allows:)

- 1 - Arithmetical functions and Dirichlet multiplications.
- 2 - Averages of arithmetical functions.
- 3 - Elementary theorems on distribution of primes.
- 4 - Finite abelian groups and their characters.
- 5 - Dirichlet's theorem on primes in arithmetic progressions.
- 6 - Dirichlet series and Euler products.
- 7 - The Riemann-zeta function and L-functions.
- 8 - An analytic proof of the prime number theorem.

Grading: Your grade exclusively depends on the homework assignments.

Active participation in class will be expected and assessed, in the form of answering questions; or better, *asking* questions.

I may request one-on-one meetings to talk about your assignments, as well.

Homeworks: These will be assigned question by question in the lectures. They are due before the following Monday's class, to be uploaded on SUCourse+. Late assignments may be accepted with a penalty, or may not be accepted at all.

Once again, the students are responsible to follow the assignments and announcements both in class, and on SUCourse+.

Academic Integrity: All university policies on academic integrity apply to our course (more information on <https://www.sabanciuniv.edu/en/academic-integrity-statement>), and they will be enforced.