

**MATH 4305A/MATH 5305W ANALYTIC NUMBER THEORY, WINTER 2021
(Tentative course outline, subject to change, updated January 6, 2021)**

Instructor: Şaban Alaca

E-mail: SabanAlaca (at) cunet (dot) carleton (dot) ca

The course will deal with two main topics:

- (1) Dirichlet's theorem on primes in arithmetic progressions
- (2) Prime number theorem

These two theorems are major landmarks in number theory and should be of interest to students in all areas of mathematics. The course will develop both the analytical tools needed to prove these theorems, and the necessary number theory from first principles.

Calendar Description: Dirichlet series, characters, zeta-functions, prime number theorem, Dirichlet's theorem on primes in arithmetic progressions, binary quadratic forms.

Prerequisite: MATH 3057, or permission of the School

Lectures (online via Zoom): Tuesdays and Thursdays 4:00 - 5:30pm

Office hours (online via Zoom): TBA

Grading Scheme: Four assignments 50%, Final exam 50%.

Textbook: There is no required textbook for this course. We will follow the Lecture Notes: Introductory Analytic Number Theory, by Ş. Alaca and K. S. Williams.

Suggested Textbooks:

T. M. Apostol, Introduction to Analytic Number Theory, Undergraduate Texts in Mathematics, Corrected fifth printing, Springer, 1998.

H. H. Chan, Analytic Number Theory for Undergraduates, Monographs in Number Theory, World Scientific, 2009.

K. Ireland and M. Rosen, A Classical Introduction to Modern Number Theory, second ed., Springer, 1990.

Email communication with instructor: According to Carleton policy under the Freedom of Information and Protection of Privacy Act (FIPPA), please use your Carleton e-mail account for all course related emails.

Announcements: You are responsible for keeping up with information announced during the lectures and tutorials, or sent to your Carleton e-mail account, or announced in cuLearn

Policies:

Academic accommodation: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Academic accommodations for students with disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or <https://carleton.ca/pmc/> for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test requiring accommodation. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. For the deadline to request accommodations for the formally-scheduled exams, visit the PMC website <https://carleton.ca/pmc/>

Religious obligations and/or accommodation for pregnancy: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details see the student guide at <https://carleton.ca/equity/accommodation/academic/students/>