MATH 7230: Analytic Number Theory Spring 2014

Lectures: Lockett 132, TR 1:30 – 2:50

Professor: Karl Mahlburg
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Website All important course information, including lecture information, homework assignments, and other announcements will be found on the course website. Please check it frequently!

Textbook Henryk Iwaniec and Emmanuel Kowalski, *Analytic Number Theory*, American Mathematical Society, Colloquium Publications **53**, 2004.

Content This is an introductory graduate course in Analytic Number Theory, which is the quantitative study of the arithmetic properties of the integers. Topics will include arithmetic functions; the Prime Number Theorem; primes in arithmetic progression and Dirichlet's theorem; Dirichlet characters; L-functions, zeta functions, and the Riemann Hypothesis; Sieve techniques; quadratic forms; Tauberian theorems; combinatorial applications, Hardy-Ramanujan's formula for integer partitions.

The majority of the course material will be drawn from Chapters 1 – 9 and 12 – 13 of Iwaniec and Kowalski, though other references will be provided for several additional topics.

Prerequisites In order to enroll in this course you must have completed MATH 7210 (Algebra I) and MATH 4181 (Elementary Number Theory), or their equivalent. Some background in Fourier Transforms (at the level of MATH 4325) and Complex Analysis (MATH 4036) is helpful but not required.

Schedule Due to University holidays, this class will **not** be held on Tuesday, Mar. 4; Tuesday, Apr. 15; or Thursday, Apr. 17. If you are unable to attend the regularly held office hours, you may also schedule an appointment.

Homework Homework assignments will be due on most **Tuesdays** at the beginning of class (1:30), and will be posted on the course website at least one week in advance. You are expected to complete the problems as thoroughly as possible, though some questions will be open-ended and/or computational.

Group work is allowed (and encouraged), but you must write your answers individually. You are also required to list the names of classmates with whom you worked.

Grading Your grade will be largely determined by the successful completion of the weekly homework assignments. Regular attendance and participation during lectures is also expected.

Grade	Standard
A	At least 90% completion of assigned work.
B	At least 80% completion of assigned work.
C	At least 50% completion of assigned work.
D/F	Less than 50% completion.