MAS 7215 – Analytic Number Theory I – Fall 2016

MWF 6th period (12:50-1:40pm) – LIT 233 – FALL 2016

INSTRUCTOR:

Krishnaswami Alladi

304 Little Hall

(352) 294-2290
email: alladik@ufl.edu

OFFICE HOURS:

M and W 8th period (3:00 – 3:50 pm) in LIT 304 and
by appointment.

PREREQUISITES:

Undergraduate course in number theory and a course in complex variable theory

COURSE DESCRIPTION:

Number Theory is one of the two oldest subjects in mathematics, the other being geometry. Yet, Number Theory is one of the most important and active areas of research today. Analytic number theory deals with fundamental arithmetical questions which can be tackled using analytic techniques. The subject has a wealth of outstanding open problems. In the past decade some dramatic advances have been made on some of these famous problems. The course will start from scratch and will be self contained, but will reach great heights in a steady ascent. Topics to be covered will include (and not necessarily in the order given below): estimates involving prime numbers, arithmetical (number theoretic) functions – their algebra and asymptotic estimates concerning them, Dirichlet series, the Riemann zeta function, the prime number theorem and its proof(s), Dirichlet's theorem on primes in progressions, the Siegel-Walfisz strongform of the Prime Number Theorem for Arithmetic Progressions, introduction to sieve methods to understand the prime twins and Goldbach conjectures – important partial results towards these conjectures, The Erdos-Kac Theorem in Probabilistic Number Theory.

NOTE: Naturally some of these topics will be covered in MAS 7216.

TEXT:

No assigned text. I will use my own notes. A number of texts will be given as references. All I expect is a background in complex variable theory.

GRADING:

Grades will be based on a few homework assignments,
and seminars that students will have an opportunity to give.

ACCOMODATION FOR STUDENTS WITH DISABILITIES:

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.