MATH 568 NUMBER THEORY II SPRING 2020

Syllabus

Class Number:	26300
Course ID:	029705
Web page:	http://personal.psu.edu/rcv4/568s20.html
Instructor:	Bob Vaughan
Office:	335 McAllister
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Office Hours:	MW 2:15-3:30 and otherwise by arrangement.
Class:	TR 12:05-01:20 Osmond Lab 116.
Texts:	Davenport, Multiplicative Number Theory, 3rd edition, Springer Verlag 0-387-95097-4. Montgomery & Vaughan, Multiplicative Number Theory, I. Classical Theory, Cambridge University Press 0-521-84903-6.
Homework:	Due on Tuesdays, starting 14th January.
Grading:	Based on Homework and Attendance.
Prerequisite:	Any course on abstract algebra or elementary number theory.

Topics will be chosen from the following

Chebychev's inequalities for the prime counting function, and Merten's theorem.
Arithmetical functions.
Zeta functions and the prime number theorem.
Primes in arithmetic progression.
The approximation of real numbers by rationals, diophantine approximation, criteria for irrationality, examples of transcendental numbers.
Uniform distribution.
The theory of exponential sums.
Vinogradov's mean value theorem and the improved zero free region.
The Selberg sieve.
Applications of the above.

All Penn State Policies, see

http://science.psu.edu/current-students/Integrity/Syllabi.html,

regarding ethics and honorable behavior apply to this course.