

**MATH 597E PRIME NUMBER
THEORY, SPRING 2008, SYLLABUS**

Instructor: Bob Vaughan
Office: 335 McAllister
Telephone: 865-3583
Email: rvaughan@math.psu.edu
Office Hours: TR 2:15-3:00 and otherwise by arrangement.
Class: TR 1:00-2:15 Room 111 Sackett.
Schedule #: 103693
Background text: (1) H. L. Montgomery & R. C. Vaughan, Multiplicative Number Theory I. Classical Theory, Cambridge University Press, xii + 516pp, 2006.
(2) Harold Davenport, Multiplicative Number Theory, third edition revised by Hugh Montgomery, Springer-Verlag, 2000.
Homework: Due every Tuesday.
Grading: Based on Homework and Attendance.

Topics

The large sieve.

Bombieri's theorem on primes in arithmetic progression.

The Selberg sieve.

The Vinogradov three primes theorem and a proof that almost all even natural numbers are the sum of two primes.

The Goldston, Pintz and Yıldırım theorem.

Some aspects of the Green, Tao work.

All Penn State Policies (see <http://www.psu.edu/ufs/policies/47-00.html#49-20> and <http://www.science.psu.edu/academic/Integrity/index.html>) regarding ethics and honorable behavior apply to this course.