MATH 467 FACTORIZATION and PRIMALITY Fall 2017 Syllabus

Class number: 28979  Class ID: 029559
Instructor: Bob Vaughan  
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Web: http://www.personal.psu.edu/rcv4  
Office Hours: MWF 10:10–11:00 and otherwise by arrangement.
Class: MWF 09:05–09:55 Thomas Bldg 207.
Text: Bressoud, Factorization and Primality Testing  


Homework: Homework due Mondays or first class in the week when Monday is a holiday, starting Monday 28th August.

Grading:
  Homework 35%,
  Midterm Exams: Wednesday 27th September 10%,  
       Wednesday 8th November 20%,
  Final Exam 35%,

A Grade: 90–100%, B Grade: 80–89%, C Grade: 70–79%, D Grade: 60 - 69%, F Grade 0 - 59%.

Topics. Unique factorization and Euclid’s Algorithm, Primality, Congruences, RSA, Some Factorization Techniques, Pseudoprimes, Quadratic Reciprocity, The Quadratic Sieve, Primitive Roots. If there is time there will be some discussion of Elliptic Curves, and The Number Field Sieve.

This course will in part involve solution of problems via multi-precision computer calculations. Very little prior knowledge of computing is required. The recommended software is PARI/GP, available for free from http://pari.math.u-bordeaux.fr/
At least some exams, including the final, will be run as computational projects.

Course objective. By the end of the course the student should be able to factor quite large numbers by the quadratic sieve.

- Late homework will not be accepted unless prior permission is granted. No homework will be accepted after the graded ones have been returned to the students. There is NO extra credit work.
- No makeup exams are available except by prior arrangement in extenuating circumstances.

- All Penn State Policies regarding academic integrity apply to this course. See http://science.psu.edu/current-students/Integrity.

- Penn State welcomes students with disabilities into the University’s educational programs. Every Penn State campus has an office for students with disabilities. The office for Student Disability Services web site provides contact information for every Penn State campus. For further information, please visit Student Disability Resources web site: http://equity.psu.edu/student-disability-resources.