Instructor: Qi Cheng (qcheng@ou.edu, DEH 254)

Class time and location: MWF 10:30–11:20, Carson Engr Ctr (CEC 0121).

Office hours: W 1:30-2:45 F 9-10:20

Teaching Assistant:

Topics: In this course, we cover the following topics:

- Basics of computational number theory.
- Block ciphers and cryptographic hash functions.
- The public key cryptography.
- The finite field discrete logarithm, Diffie-Hellman key exchange and the Digital Signature Algorithm.
- The primality testing, the integer factorization and the RSA cryptosystem.
- The elliptic curve cryptosystem and/or lattice-based cryptosystems.

Students who enroll in CS5823 are required to complete a project on elliptic curve or lattice-based cryptosystems. We take an algorithmic approach when introducing abstract mathematical objects. We will use computer algebra systems, e.g. SAGE (http://www.sagemath.org) and/or NTL (http://www.shoup.net/ntl/) extensively in the class and in the homeworks.


G. Seroussi, Nigel P. Smart and Ian F. Blake, Elliptic Curves in Cryptography, Cambridge Univ Press.

Grading: For 4823 students: Attendance (10%), assignments (30%), one programming project (20%) and final (40%). For 5823 students: Attendance (10%), assignments(25%), two programming projects (15+10%) and final (40%). Attendance will be taken at 10 class meetings, selected by the instructor. Your attendance score is determined by

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