Course number and name:	**CS 07350: Computer Cryptography**
Credits and contact hours:	3 credits/3 contact hours
Instructor's or course coordinator's name:	Seth Bergmann
Text book, title, author, and year:	*Cryptography and Network Security* by W. Stallings, 2017

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Specific course information

Catalog description: This course introduces students to the principles and practices which are required for secure communication: cryptography, cryptanalysis, authentication, integrity, and digital certificates. Mathematical tools and algorithms are used to build and analyze secure cryptographic systems with computers. Social, political, and ethical aspects of cryptography are also covered.

Prerequisites: CS 04222 Data Structures and Algorithms and
CS 07210 Foundations of Computer Science

Type of Course: ☐ Required ☒ Elective ☐ Selected Elective

Specific goals for the course:

1. Understand fundamental mathematics needed for cryptography and cryptanalysis.
2. Understand encryption/decryption, digital signatures, and digital certificates.
3. Apply the concepts described above to ensure confidentiality, integrity, and authenticity. Apply the above concepts for elementary cryptanalysis.

Required List of Topics to Be Covered:

1. Motivation for cryptography
2. Terminology
3. Origins, historic examples
4. Classical cryptographic techniques
5. Cryptanalysis
6. Symmetric encryption/decryption
7. Public key cryptography
8. Key agreement
9. Digital signatures
10. Digital certificates
11. Java packages and GPG
12. Bitcoin and blockchain
13. Social, legal, ethical aspects