Certificate in Foundations of Cybersecurity (12 credits)
Training Cybersecurity Experts

This certificate program teaches essential skills for **cybersecurity professionals** to build and maintain secure software systems while providing the tools to ensure the integrity of data and network communication. This spans topics from theoretical models of cryptography to an understanding of government and corporate policies.

The curriculum focuses on various techniques for mitigating the risk of data breaches and unauthorized access to networked devices and systems. Participants will learn how to identify security vulnerabilities in local, networked, and cloud software systems, and develop rigorous data management and software development workflows. The program consists of 4 courses of 3 credits each, taught over 2 semesters of 15 weeks each. Instruction includes formal lectures as well as hands-on projects securely storing, transmitting, and extracting data.

The program curriculum covers tools and technologies such as OpenSSL, Wireshark, Rainbow tables, Blockchains, and Certificate Transparency. Students work on assignments and projects covering both theory and applications on real-world examples with guidance from the professor and teaching assistants.

Recommended part-time credit schedule: First semester: 6, Second semester: 6. Total: 12 credits over two semesters (incl. summer).

Core (required) courses:
CS 608   Cryptography and Security
CS 645   Security and Privacy in Computer Systems

Sample electives:
CS 631   Data Management Systems Design
CS 634   Data Mining
CS 643   Cloud Computing
CS 656   Internet and Higher Layer Protocols
CS 673   Software Design and Production Methodology

Credit earned in this Certificate program can be used later towards the MS in Cybersecurity & Privacy degree.

Program Outcomes:
- Design and build secure infrastructure for managing data and communication both in the cloud and on local servers.
- Provide expert insight on security standards and protocols in large-scale software development or data analytics projects.
- Play a key role in performing ad-hoc analyses of data stored in corporate or government databases and propose solutions to potential vulnerabilities.

Tuition + fees for ALL students (independent of residency and visa status) at 2020-21 rates, assuming two courses per consecutive semester:

Fall semester: $6,522. Spring semester: $6,522. Summer semester: $5,577.

Total tuition + fees for Certificate: Fall start: $13,044. Spring start: $12,099. Summer start: $12,099.

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