COURSE DETAIL

CRYPTOGRAPHY
Country Germany
Host Institution Technical University Berlin
Program(s) Technical University Berlin
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Mathematics Computer Science
UCEAP Course Number 138
UCEAP Course Suffix
UCEAP Official Title CRYPTOGRAPHY
UCEAP Transcript Title CRYPTOGRAPHY
UCEAP Quarter Units 8.50
UCEAP Semester Units 5.70

Course Description

This cryptography courses consists of the lectures "Public Key Cryptography" and "Cryptography for Security" as well as a practice session. Public Key Cryptography examines common methods in asymmetric encryption, as well as possible attacks in faulty implementation of these methods. Topics include RSA (including signatures), attacks on small public exponent, Wiener attack, primality tests and factorization, El-Gamal, Diffie-Hellman-Key-Exchange, elliptic curves, attacks on the discrete logarithm, and selected methods of Post-Quantum-Cryptography. Cryptography for Security discusses fundamental concepts of encryption as well as their construction and their connections, classical cryptographic problems and how to solve them, formal notions of security, One-Way-Functions, (Pseudo-)Random-Number-Generators, and Pseudo-Random-Functions. Practice sessions alternate between two formats that are both primarily focused on attacks learned in class. In the first, students read encryption code and write a corresponding decryption algorithm. In the second, students prove theorems/attacks' effectiveness and make calculations by hand, often involving topics in ring theory, field theory, and group theory.

Language(s) of Instruction
English

Host Institution Course Number
3435 L 10653,0434 L 964

Host Institution Course Title
CRYPTOGRAPHY

Host Institution Campus

Host Institution Faculty
FAKULTÄT IV ELEKTROTECHNIK UND INFORMATIK

Host Institution Degree

Host Institution Department

Institut für Softwaretechnik und Theoretische Informatik

Print