ENCS5121 — Information Security and Computer Network Laboratory

Birzeit University
ENCO, Computer Engineering
First Semester 2024/2025

Instructor:	Dr. Ahmad Alsadeh	**Time:**	M 11:00 - 13:50
Email:	asadeh@birzeit.edu	**Room:**	Masri503

Course Description: The essential concepts in cryptography, including secrete-key encryption, secure hash function, and public-key encryption and Public Key Infrastructure (PKI). Also, Experiments about conducting attacks against network protocols that include UDP, TCP, ICMP, IP and ARP, traffic sniffing attacks, DNS hacking, SYN flooding. Introduction to Mininet and Mininet and Open vSwitch.

Course Page: Please check Ritaj. `https://ritaj.birzeit.edu`

Office Hours: Check Ritaj, or by appointment, or send your questions by email.

Recommended Readings:

- **Wenliang Du**, *Computer & Internet Security: A Hands-on Approach, 2019*

- **SEED Labs 2.0:** `https://seedsecuritylabs.org/Labs_20.04/`

Objectives: After successful completion of this course, the students should be able to:

- Implement and analyze the security of secret-key encryption schemes.

- Explore the properties of cryptographic hash functions

- understand protocols for key agreement and PKI

- Conduct practical experiments to identify vulnerabilities in network protocols.

Prerequisites:

- ENCS4320 — Applied Cryptography and

- ENCS3320 — Computer Networks

Tentative Course Outline:

> 01: Introduction and Lab Setup
> 02: Secret-Key Encryption Lab
> 03: Padding Oracle Attack Lab
> 04: Hash Length Extension Attack Lab
> 05: RSA Public-Key Encryption and Signature Lab
> 06: Public-Key Infrastructure (PKI) Lab
> 07: ARP Cache Poisoning Attack Lab
> 08: ICMP Redirect Attack Lab
> 09: TCP/IP Attack Lab
> 10: Local DNS Attack Lab

Grading Policy (Tentative):

> Quizzes (Every lab) .... (20%)
> Lab work and discussion (Every lab) .... (15%)
> Lab reports .... (25%)
> Project .... (10%)
> Final Exam .... (30%)

Class Policy:

- Regular attendance is essential and expected.

- Make-up will be allowed only for students who miss the lab with an acceptable excuse according to the university regulations.

Academic Honesty: Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation. All students are expected to comply with University rules and regulations on academic Integrity and honesty.