Technische Universität Braunschweig

IAS | INSTITUTE FOR APPLICATION SECURITY

Große Übung "Einführung in die IT-Sicherheit"

WiSe 25/26

Manuel Karl & Jan Drescher, 2025-10-23

Introduction to IT Security

- Prof. Dr. Martin Johns
  - Institute for Application Security (IAS)
- Aim of the course **Introduction to IT Security**
  - Theoretical and practical insights into IT security topics
  - Does not cover all topics, but provides good overview
- To pass the course, you must:
  - pass the exam
  - complete the Studienleistung

Structure

- Lecture
  - Theoretical concepts and fundamentals
  - **Wednesday 09:45 - 11:15 PK 11.1**
- Exercise
  - Practical use of the concepts
  - 8 exercise sheets
  - **Thursday 09:45 - 11:15 PK 11.1**
- Exam
  - Duration: 90 minutes
  - **Monday, 02.03.2026**

Time Plan (Preliminary)

Wednesday	Lecture	Ex. Distribution	Ex. Deadline	Thursday	Exercise
22.10.	Intro			23.10.	Intro
29.10.	Symmetric-Key Cryptography	Ex00		30.10.	*cancelled*
05.11.	Public-Key Cryptography			06.11.	*cancelled*
12.11.	*cancelled*	Ex01	Ex00	13.11.	Ex00
19.11.	Hybrid Cryptosystems	Ex02	Ex01	20.11.	Ex01
26.11.	*cancelled*	Ex03	Ex02	27.11.	Ex02
03.12.	Auth and Access Control		Ex03	04.12.	Ex03
10.12.	Network Attacks and Defenses	Ex04		11.12.	Ex04
17.12.	Web Security	Ex05	Ex04	18.12.	Ex04
07.01.	Vulnerabilities and Exploits			08.01.	*cancelled*
14.01.	Malicious Software	Ex06	Ex05	15.01.	Ex05
21.01.	Intrusion and Malware Detection	Ex07	Ex06	22.01.	Ex06
28.01.	*Practical Session*	Ex08	Ex07	29.01.	Ex07
04.02.	*Exam Preparation*		Ex08	05.02.	Ex08

Today

Kick-Off & Introduction to Python

- How to do the exercises for the Studienleistung
- Python Basics

Communication

- Lecture & Exercise held in presence
- Stud.IP course
  - announcements & slides
- Matrix Channel
  - form teams for the exercises
  - ask questions regarding the exercises
  - you can only join with your `matrix.tu-bs.de` account (use SSO)
  - if joining fails on your mobile device, try the web client at `https://chat.tu-bs.de`
- Mail to the Teaching Assistants: `itsec@tu-braunschweig.de`
  - DO NOT use other mail adresses or Stud.IP messages

Studienleistung

- 8 exercise sheets
  - programming & theoretical exercises
- you must earn **50%** of the possible total points across all sheets
- additional Master exercises
  - for those studying **IT-Sicherheit Master**
  - Bachelor: >= 50% of Bachelor exercises, master exercises = bonus points
  - Master: >= 50% total (Bachelor & Master exercises)

Prerequisites

- We expect you to have basic knowledge of the following topics, tools and programming languages:
  - `git` for submitting your solutions
  - **TCP**/**IP** for the unit on network security
  - **C** for the unit on vulnerabilities and exploits
- You can learn all of this while working on the exercises.

Submission System

- GITZ Gitlab: https://git.rz.tu-bs.de/ias/itsec/ws2526
  - tasks pushed to your repository
- Submit in teams of 2 students
- Registration in Stud.IP course
  - `Participants > Groups`
  - open now
  - Deadline: **29.10.2025 8:00 CET**

Submission

- main branch of your team repository
  - code under `src/`
  - theoretical tasks in `doc/report.md`
- Deadline: **Wednesday 9:00 CET**

Submission Format

- Code must be compatible with Python 3.11
- Markdown for theoretical tasks
- Provide references for external tools/resources
- Explain your solution to the theoretical tasks in detail

CI Tests

- tests for (most) coding exercises with expected points
- DO NOT modify the test files (`**/test/*`)
- activate the master tests in `config.json`

GITZ Gitlab

- login using SSO
- Clone/push via SSH only possible via VPN
  - https://books.rz.tu-bs.de/books/vpn/chapter/vpn-einrichten
- Also requires you to create/upload your SSH key
  - https://git.rz.tu-bs.de/help/user/ssh.md