ESSE Advanced Security for Systems Engineering WS20
Lecture 00: Preliminary Discussion

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ESSE – Establishing Security

- Institute of Information Systems Engineering
- Research Group for Industrial Software (INSO)
- Working Group Establishing Security (ESSE)
- Lectures
  - Introduction to Security (WS, Bachelor)
  - Security for Systems Engineering (CTF-Contest) (SS, Bachelor)
  - Advanced Security for Systems Engineering (WS, Master)
  - Selected Topics of Digital Forensics I (SS, Master)
  - IT Security in Large IT Infrastructures (CTF-Contest) (SS, Master)
  - Seminar on Security
Research Topics (Excerpt)

- Electronic Payments
- Large IT Infrastructures
- Secure and Anonymous Communication
- Embedded Security and Internet of Things
- Governance, Risk and Compliance
- eHealth
- Penetration Testing, Security Audits, Security Certification
- Identification, Authentication and Authorization, eID solutions
- IT Security Teaching Methods
- XML Security
Excerpt of Applying Subject Areas

- Malware and Internet Crime
- Physical Security of IT Systems
- Applied Cryptography
- Exploit Development, Offensive Computing, and Exploit Mitigation
- Rootkits and OS Security
- Honeypots, Honeynets, and Honeytokens
- Mobile Security
- Privacy-Protection in Cloud/Mobile Applications
- Security Usability for End-2-End Security
- Security Engineering in the Software Life-Cycle
Contact

- Questions regarding ESSE Advanced Security for Systems Engineering
  - https://security.inso.tuwien.ac.at/
  - Tuwel forum
  - lva.security@inso.tuwien.ac.at – please state the lecture name as this e-mail address is used for multiple lectures
  - *Please don’t use other ways, e.g., Tuwel submission comments*

- Office Hour on agreement: Wiedner Hauptstraße 76/2/2

- esse@inso.tuwien.ac.at
ESSE Advanced Security for Systems Engineering VU WS20
Aim of the Lecture

The class covers *advanced aspects* of multiple topics of *IT security* based on a *broad overall view of IT security* using *theoretical lectures*, *guest lectures giving insights in “real life” of IT security* and *exciting exercises*.

When having finished this course the students shall have the *skills* to timely *recognize advanced aspects of IT security* and introduce *appropriate security measures* in order to achieve a *sufficient level of IT security* during the operation of the respective systems.

We expect of you *interest in IT security, commitment*, also in regard to the exercises, and the *endeavor for good results*. 
Distance Learning

- Slides as well as transcriptions of lectures
- Literature research to deepen further theoretical aspects
- Slides online evening before lecture
- During begin of lecture time available in INSO Jitsi for possible discussions
- Detailed room information/password in tuwel
- Web browser is needed in order to join
- email: lva.security@inso.tuwien.ac.at
- tuwel forum
Overview Lecture

- 8 lectures and guest lectures
- 1 test, registration via TISS needed
- Grading: 60% exercises, 40% test, starting with the first submission of a lab a certificate will be issued
- The test as well as the exercises have to be positive (i.e., more than 40 resp. 60 points)
- Course material: slides, transcriptions, literature references (library)
- Registration via TISS until October 09, 2020
Overview Exercises

- 3 exercises (1 individual, 2 in teams)
- Exercises are mandatory, lab0 is final registration
- Team registration, submission of exercises etc. in tuwel
- Operating system used for exercises: Mainly Linux
Course Discontinuation

- Sometimes, you recognize your goals were set too high...
- Be fair to your team colleagues: inform your colleagues and us (lva.security@inso.tuwien.ac.at) directly after your decision
- Consequence: negative certificate after first submission
Registration for Teams

- Registration for teams in tuwel
- You have to register yourself for a team
- Tuwel forum may be helpful for finding a team
- Before joining a team with members you don’t know, please ask :)
- If you don’t know anyone and can’t find a team please join the tuwel team *Random Assignment After Deadline* and we will assign you to a team after the deadline for the team registration.

- Arrangement of teams is mandatory (otherwise, 0 points for lab1/lab2)
- If there are problems in teams, please write ASAP an e-mail to lva.security@inso.tuwien.ac.at
Communication should be encrypted nowadays

X.509 standard is currently state of the art

ESSE has its own Certification Authority (CA) for
  - Lab resources
  - Partly e-mail communication

Download of the ESSE Root CA certificate via the ESSE website and also as a second path via tuwel

Add it to your trusted CAs, otherwise you will probably get errors
Note on Attacks on the IT Security of Systems

■ You will learn precise attacks on IT systems in the course
■ This is only
  ■ to better understand IT security
  ■ secure your own IT systems
  ■ test your own IT systems in regard to the security level
  ■ and/or use in other legal ways
■ Attacking TU Wien or conducting attacks based on systems of TU Wien may lead to the withdrawal of your eligibility to study
■ Exception: Attacks within our lab in order to achieve the assignments are OK :-}
Planned Lectures – 1/2

02.10.2020  Preliminary Discussion
16.10.2020  XML Security
23.10.2020  Secure Architectures
30.10.2020  Advanced Attacks on Applications 1
13.11.2020  Advanced Attacks on Applications 2
20.11.2020  Applied Cryptography
27.11.2020  Forensics
**Planned Lectures – 2/2**

11.12.2020  Advanced Aspects of Pentesting & Red Teaming

08.01.2021  Mobile Applications

15.01.2021  Test

01/2021  Inspection of the Test, please write an e-mail

SS2021  3 Additional Tests
Planned Exercise Dates

lab0  20 points, exercise has to be finished alone,  
15.10.2020–03.11.2020

Building of teams for lab1 and lab2  05.11.2020–10.11.2020

lab1  50 points, team exercise, 12.11.2020–09.12.2020

lab2  50 points, team exercise, 09.12.2020–12.01.2021

Please note:
ESSE exercises traditionally begin at 11:55pm
Tipps for sucessfully mastering this course

- Start early with the exercises
- Interactively engage in the lectures
- For seemingly complex problems, simple solutions might exists.
- Use the lectures to discuss solutions approaches, learning priorities, and your understanding of the material
- If you prefer to self-study the material without the guidance giving in our lectures, be sure to get familiar with the given literature references
Support for Questions Regarding the Lecture

- Questions that are interesting/should be visible for other students as well
  - Tuwel forum
  - *Please note: We do not* monitor other forums
  - *Please do not use other ways, e.g. Tuwel submission comments*

- Specific questions
  - lva.security@inso.tuwien.ac.at – please state the lecture name as this e-mail address is used for multiple lectures
  - Office hour
Literature 1/2


Thank you!

https://security.inso.tuwien.ac.at/advsecsyseng-ws2020/