Presentation: Fundamentals of IT Security by Prof. Dr. Norbert Pohlmann
1. Introduction
(Logo/Headshot of Prof. Dr. Norbert Pohlmann)
A detailed discussion about the integral aspects of IT Security by esteemed professor and IT security expert, Dr. Norbert Pohlmann, from Westphalian University of Applied Sciences, Gelsenkirchen, Germany.
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2. Overview of Presentation
- Course General classification
- Learning Goals
- Course Content
- Topics for elaboration and presenting (exercises)
- Practical Applications
- Resources / Relevant literature
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3. Course Classification
The course "Fundamentals of IT Security" is:
- A mandatory module for Bachelor's Program in Computer Science, with specialization in Practical Computer Science.
- An optional module for the Bachelor studies in computer science, technical computer science, media computer science and business computer science.
4. Recommended Pre-Requisites
- Understanding of Internet protocols, computer networks, or networks
- Basics of Operating systems
- The course can be beneficially attended even without these prerequisites!
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5. Learning Goals
- Acquire an understanding of potential cyber threats and suitable countermeasures.
- Understanding the construction, principles, architecture, and functioning of security components and systems.
- Experience in elaborating and presenting new topics from the area of IT security.
- Practical experience about the use and effects of security systems.
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6. Course Content
* Introduction to IT Security
- Current state of IT security
- Cybersecurity strategies
- Needs for Cybersecurity
- Understanding perpetrators - their motivations, categories, and modes of attack.
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* Cryptography and technological basis for protective measures
- Private-key procedures
- Public-key procedures
- Cryptoanalysis
- Hash functions
- Key generation
- Security modules, smart cards, TPM
- High-security and high-performance solutions
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* Authentication procedures
- Fundamental principles
- Algorithms
- Procedures

- ID- Management
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7. Topics for Elaboration and Presentation
(Exercise)
Possible topics are:
- New vulnerabilities
- New threats
- New attacks
- New security mechanisms
- Changes in the internet
List of the 10 biggest problems on the internet: detailed description and discussion on why they are problematic and the potential damage they can cause.
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8. Practical Applications
* An immersive hands-on practical experience would be coordinated via a Moodle course.
* The 'ITS-Practical' is a course requirement for the examination!
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9. References / Literature
* Lecture Slides in PDF format
* Important Books: ""Cyber-Security: The textbook for concepts, mechanisms, architectures, and characteristics of cyber-security systems in digitalization"", Springer Vieweg Publisher, 2019
* Recommended websites for further reading:
* www.bsi.de
* www.teletrust.de
* www.bridge-ca.org
* www.it-sicherheit.de
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10. Conclusion
Understanding the foundational principles of IT security can help you protect information and systems from attacks, address vulnerabilities, and implement strong security strategies in various contexts.
11. Questions
(Session reserved for any questions from the audience)
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12. Annex
* Appendix - List of image sources used in the presentation
* Recommendations - Top picks for pursuing further education in IT Security with useful websites and resources.
End of Presentation.