Teaching RFID Information Systems Security to Non-RF Students

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http://rfidsecurity.uark.edu
Internet of Things (ThingNet)

Physical access control

Item management

Travel documents

Finance and banking

Animal tracking

Anti-counterfeiting

http://rfidsecurity.uark.edu
Need Knowledge of RF Issues

http://rfidsecurity.uark.edu
E-Passport Hacking

- Self-signed passport passes passport self scan in Amsterdam Airport in Sep. 2008

http://freeworld.thc.org/thc-epassport/

http://rfidsecurity.uark.edu
Skills for Successful Engineering Student

Engineering basics

Hardware

Software

Security

Radio frequency

Computer networking

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The goal of this project is to improve the quality of education nation-wide in radio frequency identification (RFID) information systems security (INFOSEC) by creating new learning materials and teaching strategies that address security at the tag, media interface, reader, network, middleware, and application layers.

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RFID Background
- history, applications, reference model, hacking, social implications

Social Issues
- privacy, ethics, religious objections, activists

RFID Standards
- EPCglobal, ISO/IEC, FCC, HSPD-12, Smart Cards, Real ID Act of 2005, Passports, NIST

Reader Layer
- architecture, antenna configurations, Gen-2 sessions, dense-reader operation, LLRP, middleware

Media Interface Layer
- frequency bands, electromagnetics, antennas, modulation, encoding, FFT, singulation, Gen-2, threats, risks

RFID Security
- confidentiality, integrity, availability, cryptography, threat modeling, risk analysis

Tag Layer
- architecture, Gen-2 finite state machine, threats, mitigation
Organization of Learning Materials

Module 4: Media Interface Layer
- Goal Document
- Assessment Rubric
- Lesson 1: RFID Frequency Bands
  - Lesson Plan
  - Lesson Slides
- Lesson 2: Electromagnetics and Antenna Overview
  - ...
RFID INFOSEC Lab

- Reading/writing tags
- Antenna orientations
- Distance and power measurements
- Shielding
- Setting passwords

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Website

http://rfidsecurity.uark.edu
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