EUROPEAN INFORMATION TECHNOLOGIES CERTIFICATION INSTITUTE, ASBL.

Brussels, Belgium, European Union

CERTIFICATE

Lorraine van Lierde

Has successfully completed test requirements of
The European Information Technologies Certification Programme

EITC/IS/IST Information security theory

Certification Programme examination result: 100%

Certification Programme description:

Definition of information (classical state, message source): unit of information (bit) and other units of information, measures (Shannon entropy), Graph theory, Conditional probability, Bayes theorem; Random and pseudorandom sequences: importance of randomness to security; Introduction to coding: types of codes, Humming codes, compression (lossy and lossless), Shannon's Theorem; Communication channels: lossless channels, lossy channels, types of information noises, Error correction procedures; Basic definitions of information theory: algorithm, algebra, language, grammar; Computational complexity theory: classes of problems, polynomial problems (P), non-deterministic polynomial problems (NP), NP-complete problems, Context of asymmetrical cryptography; Computational models: state machines (Turing machine, DFA, NFA), Church-Turing Thesis; Boolean algebra and classical logical circuits theory: logical gates, universality, non-reversibility of binary information in Boolean algebra, implementations of algorithms; Probabilistic computational model: NBP problem class, extended Church-Turing Theorem; Quantum computational model: NQP problem class, Quantum circuits theory, Fundamental weakness of asymmetrical cryptography (Fourier transform, Shor's algorithm for factorization, Quantum Fourier transform by Kitaev, discrete logarithm problem, modulo algebra problem, hidden subgroup)

Certificate Programme version/revision: EITC/IS/ISTv1r2

Earned ECTS credits: 2

CERTIFICATE ID: **EITC/IS/IST/AAF08101234**

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DATE OF ISSUE:
January 2015
Brussels, Belgium
European Union