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| **Course unit title** | **INFORMATION SYSTEMS SECURITY** |
| **Course unit code** | InfT6009 |
| **Type of course unit** | A part – Compulsory part |
| **Level of course unit** | 2nd cycle (Master) |
| **Year of study** | - |
| **Semester** | II |
| **Number of ECTS credits** | 3 |
| **Name of lecturer(s)** | Rūdolfs Gulbis, Master of Physic Sciences |
| **Learning outcomes of the course unit** | **Aims of the course**  The aim of the course is to develop understanding of information systems's security measures, their importance in data protection and communication.  **Objectives of the course**   * To acquaint with general conceptions of information systems' security * To figure out problems of information systems and be able to indentify their sources.   Give an idea of types and methods for ensuring high security.  **Results of the course (competences to be developed)**  Skills and abilities for security's problems identification and supervision. |
| **Mode of delivery** | Face-to-face |
| **Prerequisites and co-requisites** | - |
| **Recommended optional programme components** | - |
| **Course contents** | During the course students will acquire theoretical and practical knowledge about basic formulations of information systems' security. After finishing the course students will be able to assess security's problems and find a solution for their prevention. |
| **Course plan** | |  |  | | --- | --- | | **Theme** | **Sub-theme** | | 1. Introduction in IS security | Security's teminology  Defining of security's notion  Security principles of information systems | | 1. Nets' security | Notion of security in OSI level. The most typical types of attack, examples. | | Measures for net's protection and testing of net's security | | 1. Cryptography | General conceptions of cryptography  symmetric, asymmetic cryptography  Digital signatures | | Unit codes, process codes, coding with public key | | 1. Protocol of session security | Kerberos,  SSL/TLS,  IPSEC | | 1. Protocols of reports' security | S/MIME,  XMLDSIG & XMLENC | | 1. Identification and authentication | Authentication with password  Other types of authentication | | 1. Access control | Subjects and objects  Structures of access control | | 1. Security of operating system | Security of Windows systems,  Unix, Linux systems' security | | 1. Data base and web server security | Data base and web server security | | 1. Security's models | Bell-LaPadula, Biba, Clark-Wilson,  China wall and other models | | 1. Security assessment | Criterias for security's assessment, TCSEC, ITSEC etc. | | To assess ones own work environment's information systems' security. | | 1. Nets' security | Data base designing modern tools  Data storages: Access, methods, tools. Metadata. | | 1. Knowledge management | Learning organisations)  Substance and tools of knowledge manegement | |
| **Recommended or required reading** | D.Gollmann: Computer Security, 2nd edition, Wiley & Sons, 2005, ISBN: 040862939Joseph Migga Kizza, Computer Network Security, Springer, 2005.Thomson NETg, Certified Information Systems Secuity Professional, Thomson NETg, 2005.Omar Santos: End-to-End Network Security - Defense-in-Depth, Cisco Press, 2008Nitesh Dhanji Linux and Unix security – Portable reference, McGraw-Hill, 2003Steve Manuik, Ken Pfeil, Andre Gold, Network Security Assesment – from vulnerability to patch, Sungress, 2007William R. Cheswick, Steven M. Bellovin, Aviel D. Rubin Firewalls and Internet Security Second Edition, Addison-Wesley Professional, 2003Aaron E. Earle, Wireless Security Handbook, Auerbach Publications, 2006Alfred J.Menezes, Paul C. Van Oorchot, Scott A. Vanstone, Handbook of Applied Cryptography, MIT Press, 1996 |
| **Planned learning activities and teaching methods** | Lectures, practical works, student's individual work |
| **Assessment methods and criteria** | **Test**  Students have to fulfil all home tasks and individual works.  They have to assess available information systems' security, identify imperfections and have to prepare a project/description of security system's improvement. |
| **Language of instruction** | English |
| **Work placement(s)** | N/a |