SPb SUT)))

10.04.01

INFORMATION SECURITY

Computer Systems Security (Educating the Next Generation of Experts in Cyber Security)

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FIELD OF STUDY (CODE, TITLE)	TITLE OF THE ACADEMIC PROGRAMME
10.04.01 Information Security	Computer Systems Security (Educating the Next Generation of Experts in Cyber Security)

DEGREE LEVEL	DURATION OF STUDY
Master's degree	2 years

PROGRAMME DESCRIPTION

The program was developed in accordance with international standards and requirements, based on ENGENSEC Master's program (Tempus project). The best experts in the relevant fields from academic and industrial environment were involved for the Program's development. The main goal of the program is an in-depth study of topical issues of information security, communication system protection and digital forensics.

MAIN ACADEMIC COURSES

- Information Security Management;
- Advanced Network and Cloud Security;
- Malware;
- Digital Forensic;
- Big Data Security Technologies.

ADVANTAGES OF STUDY

The department of Secured Communications Systems is recognized to be the best Education Center in Russia in the area of Information Security for three times.

SPbSUT received certificates of international professional and public accreditation of educational programs in the areas of training 10.03.01 Information Security, 10.04.01 Information Security, 10.05.02 Information Security of Telecommunication Systems, 10.06.01 Information security, 11.03.02, 11.04.02 Infocommunication Technologies and Communication Systems.

The areas of training participating in accreditation were awarded with the Excellent quality badge, which guarantees the high quality of educational programs certified in accordance with European standards of ESG education.

We have a successful experience in implementing Double Degree programs with European Universities (BTH Sweden).

OUTSTANDING PROFESSORS

Andrey Krasov

Candidate of Technical Sciences, Associate Professor, Honored Worker of the Higher School of the Russian Federation, Head of the Department of Secure Communication Networks, Accreditation expert Federal Service for Supervision in Education and Science

Andrey Krasov is a member of the Guild of Vocational Education Experts, accredited international expert IQAA-IQAA (Republic of Kazakhstan), academician of the International Academy of Telecommunications, member of the Information Security Methodological Council under the Federal Service for Technical and Export Control of Russia for the Northwestern Federal District.

COURSES

- Malicious Software
- Programming Languages
- Assembler in Information Security Tasks
- Development of Protected Applications
- Computer Viruses
- Fundamentals of Scientific and Experimental Research
- Disciplines of Training Highly Qualified Personnel

Andrey Chechulin

Candidate of Technical Sciences, Associate Professor of the Department of Secure Communication Networks

Andrey Chechulin is a leading researcher at the Laboratory of Computer Security Problems of Federal State Budgetary Institution St. Petersburg Institute of Informatics and Automation of the Russian Academy of Sciences.

COURSES

- Information Security in Data Centers
- Protection of Cloud Computing and Telecommunications
- Fundamentals of Inter-Network Interaction
- Building a Secure Information Security Architecture for Cloud Computing
- Principles of Organization of Local Computer Networks
- Information Security Technologies

Igor Ushakov

Candidate of Technical Sciences, Associate Professor of the Department of Secure Communication Networks. Head of the educational program of Master's program "Infocommunication Technologies and Communication Systems", specialty "Secure Systems and Communication networks", Head of the Eltex Academy of SPbSUT, leading lecturer of the Department in the block of disciplines for the Security of Computer Networks and Data Processing Centers

COURSES

- Network Technologies and Information Security
- VSAT Monitoring and Control Network
- Computing Networks
- Fundamentals of Routing in Computer Networks
- Computing Networks
- Information Security in Data Centers
- Protection of Cloud Computing and Telecommunications
- Fundamentals of Routing in Computer Networks
- Networking Basics
- Building a Secure Information Security Architecture for Cloud Computing
- Principles of Organization of Global Computer Networks
- Principles of Organizing Local Area Networks
- Big Data Information Security Technologies

Valery Korzhik

Doctor of Technical Sciences, Professor. Honored Professor of the Higher School of the Russian Federation, member of IEEE, honorary professor of SPbSUT, member of the Scientific and Technical Council, member of the dissertation council of SPbSUT

COURSES

- Fundamentals of Steganography
- Fundamentals of Scientific and Experimental Research
- Digital Forensics
- Shorthand Technologies in Infocommunication Systems

MAIN AREAS OF RESEARCHES

- Advanced Network & Cloud Security:
- Wireless & Mobile Security;
- Secure Software Development;
- Malware Analysis;
- Web Security;
- Penetration Testing and Ethical Hacking;
- Digital Forensics.

PRACTICE AND FUTURE CAREER

Future masters could find a job in security departments in banks, private companies, to become a pentest engineers, work in Security Operation Centers. Also, they continue research work in cyber security area in scientific organizations.

FEEDBACK FROM GRADUATES

Students of Blekinge Institute of Technology (BTH) Andreas Korsbakke and Joel Lidmark have been studying on Double Degree programme "Information Security" (Department of Secure Communication Systems) at SPbSUT since September 2019.

Education is conducted in English by leading lecturers of the University.

Master students had the following disciplines in the first semester of study: Information Security Certification, Information Security Management, Big Data Information Security Technologies, Information Security Technologies, Secure Information Systems.

> Studying process at SPbSUT differs from BTH. SPbSUT professors pay much more attention to laboratory work, constantly monitoring your activity. This allows you to plunge deeper into the subject and give you the opportunity to distribute your free time effectively.
>
> **Andreas Korsbakke**

> We are very pleased to have the opportunity to study in Russia, to have modern courses that were developed during the ENGENSEC project: Securing Cloud Computing and Telecommunications, Penetration Testing and Ethical Hacking, Secure Application Development. This is a unique opportunity to combine studies in modern programs with visits to the museums of wonderful St. Petersburg!
>
> **Joel Lidmark**

Master students attended the international conference IDC-2019. Reports of scientists were presented and an international scientific school was held at the conference.

Joel Lidmark and Andreas Korsbakke successfully defended their thesis on the topic: "Forecasting alarms using machine learning Predicting tall oil production at Sodra cell". Scientific advisers – Ph.D., Associate Professor Andrey Krasov, Ph.D., Associate Professor Andrey Chechulin, Martin Boldt, Ph.D. (BTH, Sweden).
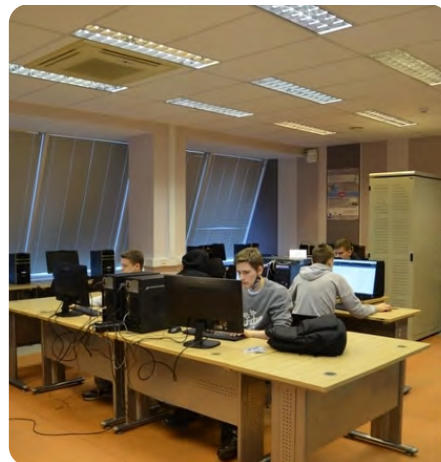
ENROLLMENT TESTS

Enrollment tests are held in the form of an interview and contain an assessment of the applicant's knowledge in the following disciplines:

- Methods for Assessing the Security of Computer Systems
- Cryptographic Methods of Information Protection;
- Computer Viruses;
- Basics of Steganography
- Security of IP-telephony;
- Security of Computer Networks;

- Guiding and Methodological Documents of the Authorized
- Federal Executive Authorities for Information Protection;
- Development of Secure Software;
- Secure Operating Systems;
- Routing Basics in Computer Networks.

THE CONTENT OF THE PROGRAM OF THE ENROLLMENT TESTS

- The Main Components of Information Security. Threats to Information Security.
- The Legislative Level of Information Security. Standards in the Field of Information Security.
- Authentication and Authorization Mechanisms in TCP/IP Networks.
- Computationally Stable Cryptosystems (Simple and Complex Algorithms).
- Stream Ciphers (Construction Methods, General Characteristics).
- Properties of Stream Ciphers.
- Principles of Constructing Block Ciphers.
- Principles of Construction of Asymmetric Cryptosystems.

- Description of the RSA Cryptosystem. Complexity of Operations in RSA.
- Potential Attacks on RSA.
- Message Authentication. User Authentication.
- Audit in Secure Information System.
- Models of Differentiation of Access Rights in Information System.
- Types of Computer Viruses and Methods of Dealing with them. Antivirus Programs and Packages.
- Firewalls and Intrusion Prevention Systems.
- The Main Protocols of Network Interaction.
- Voice Transmission Protocols in TCP/IP Networks.

> ℹ You are welcome to ask any questions that may arise within the interview.