MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION

Federal State Budgetary Educational Institution of Higher Education

«SAINT-PETERSBURG STATE UNIVERSITY OF ECONOMICS» (UNECON)

APPROVED:
Vice-rector for study and methodical work
_____ Veronika G. Shubaeva
«__» _____ 2022.

Информационная безопасность / Basics of Information Security

Syllabus of the course

Specialty	*38.03.02 Management*
Specialization	*Business management and digital innovations*
Level of higher education	*Bachelor*
Form of training	*Full-time*
Year of enrolment	*2022*

Authored by:

Candidate of Technical Sciences, Sukhostat Valentina Vasilyevna

Total number of hours	108	**Form of final attestation:**
incl:		
contact work	48	Test: semester 5
self-study	60	
practical training	0	
control hours	0	

Hours distribution:

Semester:	5
Type of classes	Hours
Contact hours	20
Practical training	28
Laboratory work	
Total contact hours	**48**
Self-study	60
Control hours	0
Total academic hours	**108**
Total credits	**3**

Saint-Petersburg
2022

CONTENTS

1. LEARNING OBJECTIVES

Objective:	To acquire the necessary theoretical knowledge in the field of information security, to form the skills and skills of the user to protect information in the operating environment.

2. COURSE PLACE IN THE PROGRAMME STRUCTURE

The discipline B1.V. Basics of Information Security is a part of Block 1.

3. EXPECTED LEARNING OUTCOMES

Code and name of graduate competence	Code and name of the competence achievement indicator	Expected learning outcomes
PC-5 – Organizational support of digital transformation of documented areas of activity of the organization	PC-5.2 – Definition of requirements for information systems of documented areas of activity for the preservation and protection of digital content of the organization	To know: the basic requirements for information systems of documented areas of activity for the preservation and protection of digital content of the organization, the main technologies and methods of information protection in the enterprise To be able to: determine the requirements for information systems of documented areas of activity for the preservation and protection of digital content of the organization, use the basic technologies and methods of information protection in the enterprise. To possess: skills of organizational support of digital transformation of documented areas of activity of the organization.
PC-6 – Structuring of data and metadata of documented areas of activity of the organization	PC-6.1 – Development of organizational measures to ensure the succession of structured data and metadata of documented fields of activity, definition of requirements for information systems for the preservation and protection of digital content of	To know: the main issues of ensuring the succession of structured data and metadata of documented fields of activity, requirements for information systems for the preservation and protection of digital content of the company To be able to: develop organizational measures to ensure the succession of structured data and metadata of documented fields of activity, define requirements for information systems for the preservation and protection of the company's digital content. To possess: skills in developing organizational measures and requirements for information systems for the safety and protection of digital content of the enterprise.

	the company	
UK-11 - Able to form an intolerant attitude towards manifestations of extremism, terrorism, corrupt behavior and counteract them in professional activities	UK-11.2 – Follows basic ethical values, demonstrating an intolerant attitude to corrupt behavior	To know: basic ethical values in the field of information security. To be able to: follow basic ethical values, demonstrating an intolerant attitude to corrupt behavior. To possess: the ability to form an intolerant attitude to corrupt behavior.

4. COURSE STRUCTURE AND CONTENT

Code and name of the topics	Course content	Academic hours			
		Contact work			Self-study
		Lectures	Practices	Workshops	
Topic 1. Basic definitions and tasks of information security	The concept of security of an automated information system. The concept of information protection. Confidentiality, integrity, accessibility. Subjects interested in ensuring information security. Levels of information security. Information security systems.	2			6
Topic 2. The role of the strategic plan of organizations in the financial planning system and the procedure for its development.	The concept of an information security threat. The main types and sources of threats to information security. Internal and external threats. The concept of vulnerability of an information system, attacks on the system. The concept of risk. Causes, types, channels of leakage and distortion of information. The main methods of implementing threats to information security: methods of violating the secrecy, integrity and availability of information. Security policy. Information risks. Risk management. Qualitative and quantitative risk analysis. Methods of risk assessment. Risk assessment model. Economic consequences of attacks on information. The structure of damage to the enterprise from the implementation of threats to information security.	2			6
Topic 3. .Legal provision of information security. Information security standards	Legal measures to protect information. State regulation in the field of information security. The doctrine of information security of the Russian Federation. Law 149 FZ "On Information, Information Technologies and Information Protection". Legal regimes of access to information. Types of secrets. Personal data. State regulatory bodies of the Russian Federation. Computer crimes. Standards in the field of information security. The main international standards of information security. Information security management processes. The risk management process of the organization and its procedures. Problems of application of information security standards.	2	2		6
Topic 4. Ensuring the integrity of information.	Stages of the process of carrying out an attack on an information system. Classification of attack detection systems. Deceptive systems. Integrity control systems and log analysis systems. Event registration systems.	2	2		7

Antivirus protection	Definition of methods and technologies of information protection. Malicious software. Classification of malware. The concept of a computer virus. Trojan programs. The main types of computer viruses. The main classes of malware by the nature of the impact on the computer system. The main trends in the development of viral technologies. Possible consequences of virus attacks. Methods and means of antivirus protection.				
Topic 5. Identification and authentication systems. Password systems.	Identification and authentication systems: basic definitions, types, scope, classification. Password protection. General approaches to the construction of password systems. Choosing passwords. Methods of cracking passwords. Password selection methods.	2	2		7
Topic 6. Ensuring the confidentiality of information. Cryptographic and steganographic methods of protection.	Fundamentals of modern cryptography. Concepts and definitions of modern cryptography. The strength of the cipher. The durability of encryption algorithms. Classification of cryptographic algorithms. Historical ciphers. Requirements for modern encryption algorithms. Symmetric encryption algorithms. Public key encryption algorithms. Historical methods of steganography. Digital steganography. Definitions and methods of digital steganography. The stegosystem. Areas of application of computer steganography.	4	12		7
Topic 7. Electronic signature technology.	Electronic signature algorithms. Hashing. Types of cryptographic hash functions. Secure digital signature. Digital certificates.	2	2		7
Topic 8. Access control. Protected operating systems. Document protection	Discretionary and mandatory access control. Access levels. Role-based access control. Two-level assignment of access rights. The structure of the operating system. Windows OS security Configuration tools. Windows user authentication. Protected NTFS file system. Windows OS encryption tools. Secure data destruction. Methods for protecting system files in Windows. Protection of users' work on the Windows network. Protection of office documents. Database protection technologies.	2	8		7
Topic 9. Methods of protection of network information technologies	Basic principles of network protection organization. Typical security threats and vulnerabilities of network information systems. Classification of unauthorized access methods and the life cycle of attacks. Methods of countering unauthorized network and inter-network access. Authentication of a local network user. Differentiation of access to the local network. Countering unauthorized inter-network access. Using firewalls. Criteria for their evaluation. Tunneling. Virtual private network technology. Secure network protocols. Security of work on the Internet. Secure delivery of e-mail messages.	2			7
Control hours:					**0**
Total hours:		**20**	**28**	**0**	**60**

5. TEACHING AND LEARNING TOOLS OF THE COURSE

5.1 Recommended literature

Bibliographic description of the publication (author, title, type, place and year of publication, number of pages)	Digital resources
Sukhostat V.V. Information security: a textbook / V.V. Sukhostat. – St. Petersburg: Publishing House of Spbsetu, 2021. – 92 p.	https://opac.unecon.ru/elibrar ... BE%D1%81%D1%82%D0%B0%D1%82.pdf
Stelmashonok E.V., Sukhostat V.V. Information security: a textbook / E.V. Stelmashonok, V.V. Sukhostat. – St. Petersburg: Publishing House of Spbsetu, 2020. – 84 p.	https://opac.unecon.ru/elibrar ... D0%BE%D1%81%D1%82%D1%8C_20.pdf
Nesterov, S. A. Information security: textbook and workshop. — Electron. dan. — Moscow: Yurayt, 2019. — 321 s	https://urait.ru/bcode/434171
Ishcheinov V.Ya. Information security and information protection: dictionary of terms and concepts. — Electron. dan. — Moscow : Rusains, 2019 .— 226 p .	https://book.ru/book/932909
Shangin V.F. Complex information protection in corporate systems : a textbook. — Electron. dan. — M. : ID "FORUM" : INFRA-M, 2019. — 592 p.	https://znanium.com/catalog/document?id=330966

5.2 List of software (including national production)

- 7-Zip
- LibreOffice
- ОС Альт образование 10
- LibreOffice Base
- LibreOffice Calc
- LibreOffice Writer

5.3 List of reference systems and modern professional databases

№	Name of reference systems and professional databases
1.	Digital library Grebennikon.ru – www.grebennikon.ru
2.	Science Digital Library eLIBRARRY – www.elibrary.ru
3.	Science Digital Library КиберЛеника – www.cyberleninka.ru
4.	Database ПОЛПРЕД Справочники – www.polpred.com
5.	Database OECD Books, Papers & Statistics on the platform OECD iLibrary www.oecd-ilibrary.org
6.	Legal reference system КонсультантПлюс (installed resource UNECON or www.consultant.ru)
7.	Legal reference system «ГАРАНТ» (installed resource UNECON or www.garant.ru)
8.	Information and referral system «Кодекс» (installed resource UNECON or www.kodeks.ru)

9.	Digital library system BOOK.ru - www.book.ru
10.	Digital library system ЭБС ЮРАЙТ – www.urait.ru
11.	Digital library system ЗНАНИУМ (ZNANIUM) – www.znanium.com
12.	Digital library UNECON – opac.unecon.ru

6. TECHNICAL FACILITIES

There are special rooms for lectures, seminars, coursework, group and individual consultations, current and interim assessments, as well as rooms for self-study.

The premises are equipped with equipment and teaching aids.

The rooms for students' independent work are equipped with computers with Internet connection and access to the university's electronic learning environment.

Name of classroom	Classroom location
Classroom 2009 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Special furniture and equipment: Educational furniture for 122 seats (study table 61 pcs., chairs 122 pcs.), the teacher's workplace, desk m/m, drawer 1 pc, chalk board 1 pc (3 sections), chair 1 pc, drawer 1 pc, chair 1 pc, Chair 2 pcs., Intel i3-2100 2.4 Ghz /4Gb/500Gb/Acer V193 19" - 1 pc, Sound projector Yamaha YSP-3000 - 1 pc, Projector stand with camera decks - 1 pc, Projection screen draper - 1 pc, Multimedia projector Type 2 Panasonic PT-VX610E - 1 pc, Screen Media D1 ceiling bracket - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2011 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 118 seats, teacher's workplace, desk - 1 pc, chalk board (3 sections) - 1 pc, marker board - 1 pc, desk - 1 pc, desk - 1 pc, drawer - 1 pc, chair - 3 pcs., Computer Intel i3-2100 2.4 Ghz /4Gb/500Gb/Acer V193 19" - 1 pc, ScreenMedia Champion 244x183cm SCM-4304 - 1 pc, Panasonic PT-VX610E multimedia projector - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2028 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 44 seats, teacher's workplace, chalk board (one section) - 1 pc, chair - 1 pc, table - 1 pc, chair - 3 pcs. Portable multimedia set: HP 250 G6 1WY58EA laptop, LG PF1500G multimedia projector. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2045 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 78 seats, teacher's workplace, chalk board (3 sections) - 1 pc, chair - 1 pc, chairs - 2 pcs. Portable multimedia set: HP 250 G6 1WY58EA laptop, LG PF1500G multimedia projector. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2052 Training classroom (for lecture- and seminar-type classes,	191023, St.

coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 88 seats, teacher's workplace, chalk board (3 sections) - 1 pc, desk - 1 pc, table - 2 pcs, chair - 2 pcs, Computer Intel i3-2100 2.4 Ghz/500/4/Acer V193 19" - 1 pc, Multimedia projector Type 2 Panasonic PT-VX610E - 1 pc, ScreenMedia Champion 244x183cm SCM-4304 motorized screen - 1 pc, MW Cinerollo 200*200cm manual spring loaded screen - 1 pc, Multimedia projector Type 2 Panasonic PT-VX610E - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2060 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 82 seats, a teacher's workplace, chalk board (3 sections) - 1 pc., chair - 1 pc., table - 1 pc., chair - 2 pcs., Computer Intel i3-2100 2.4 Ghz/500/4/Acer V193 19" - 1 pc., Multimedia projector Panasonic PT-VX610E - 1 pc., Screen with electric drive ScreenMedia Champion 203x153cm (SCM-4303) - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2061 Training classroom (for lecture- and seminar-type classes, coursework, group and individual consultations, current control and intermediate attestation), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 80 seats, teacher's workplace, table - 1 pc, chalk board (3 sections) - 1 pc, pulpit - 1 pc, chairs - 2 pcs. Portable multimedia set: HP 250 G6 1WY58EA laptop, LG PF1500G multimedia projector. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2023 Computer room (for practical classes, course design (coursework) using computer technology), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 48 seats, teacher's workplace (computer desk - 1 pc.), wheeled marker board - 1 pc, 3 sectional marker board - 1 pc, desk - 1 pc, iso chair - 7 pcs, chair -1 pc, blinds - 3 pcs., Computer i5-8400/8GB/500GB_SSD/Viewsonic VA2410-mh -34 pcs, Switchboard Cisco Catalyst 2960-48PST-L (including SmartNet Service Contract CON-SNT-2964STL) - 1 pc, Wi-Fi Access Point Type1 UBIQUITI UAP-AC-PRO - 1 pc, NEC M350 X projector - 1 pc, Local Area Network Switch (48 ports) Cisco WS-C2960+48PST-L - 1 pc, ProCurve Switch 2626 - 1 pc, Intel pentium x2 g3250 computer /500gb / philips 21.5' monitor - 1 pc, Ubiquiti IP video camera - 1 pc, Wireless access point/UNI FI AP PRO/Ubiquiti - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P
Classroom 2034 Computer room (for practical classes, course design (coursework) using computer technology), equipped with a multimedia system. Specialized furniture and equipment: Educational furniture for 25 seats, teacher's workplace (table 1pc., chair 1pc.), marker board 1pc, Rack hanger 2pcs, chairs 3pcs.Computer I5-7400/8Gb/1Tb/DELL S2218H - 21pcs, Network switch Cisco WS-C2960-48TT-L (Catalyst2960) 48-ports 10/100Mbps+2p - 1 pc, Switchboard Cisco Catalyst 2960 24 WS-C2960-24PC-L - 1 pc. Sets of display equipment and visual aids: multimedia applications for lecture courses and practical sessions, interactive teaching and visual aids.	191023, St. Petersburg, Griboedova canal, 30-32, lit. A, Б, P

7. METHODOLOGICAL GUIDELINES FOR STUDENTS

The following documents should be made available to the trainee before the start of the course:

– training and methodological documentation;

– local normative acts regulating the main issues of the organisation and implementation of educational activities, including those regulating the procedure for current monitoring and interim assessment of students;

– the schedule of consultations of the teaching staff.

The level and depth of mastering the discipline is determined by the active and systematic work of students in lectures, seminars, independent work, including in terms of identifying the most significant and relevant problems for further study. A special condition for qualitative mastering of the discipline is an effective organisation of work, which allows distributing the academic workload evenly in accordance with the schedule of the educational process.

When preparing for classes, students have the opportunity to attend consultations with the staff of UNECON according to the timetable set out in the schedule of consultations.

The students' in- and out-of-classroom work should aim to form:

– the fundamentals of the learner's world view and scientific understanding;

– basic knowledge relevant to the training area and the declared professional field, forming the target and professional basis for training;

– professional competences oriented towards the needs of the labour market;

– An individual trajectory by mastering a unique set of professional competences that complement the learner's competence model, through a focus on specific professional specialised areas of knowledge defined by labour market representatives;

– metha-skills for learners, such as teamwork and leadership, data analysis, digital skills, project design and implementation, intercultural interaction.

8. SPECIFICATIONS FOR TEACHING DISABLED PERSONS

Students with disabilities, if necessary, are taught on the basis of an adapted work programme using special teaching methods and didactic materials that take into account the particularities of their psychophysical development, individual capacities and health status.

In order for disabled persons and persons with disabilities to master the curriculum, the University shall ensure that:

– for the visually impaired and visually impaired: availability of information on the timetable in accessible places and adapted forms for learners who are blind

or visually impaired; presence of an assistant to assist the learner as needed; production of alternative formats of teaching materials (large print or audio files);

– for the hearing-impaired and hearing-impaired: adequate sound reproduction of information;

– for persons with disabilities and persons with mobility impairments: the possibility of unimpeded access for students to classrooms, restrooms and other areas of the department, as well as their stay in these areas.

Learners with disabilities and persons with disabilities are provided with printed and/or electronic educational resources in forms adapted to their disabilities. The education of students with disabilities may be organised with other students or in separate groups or organisations.

ASSESSMENT RESOURSES

1.1 Control tasks and assignments for interim attestation

Is not provided by the work programme of the discipline.

1.2 Topics for written task

Is not provided by the work programme of the discipline.

1.3 Interim checkpoints

Number	Type	Method of conduct	Topic number
1	Problem solving	with the help of technical means and information systems	5,6
2	Problem solving	with the help of technical means and information systems	6
3	Monitoring	with the help of technical means and information systems	1-9

1.4 Other assessment objects

Is not provided by the work programme of the discipline.

1.5 Self-study

Name of self-study	Topic number
Preparation for lectures and practical classes	1-9

1.6 Grading scale

Scales of assessment and procedures for assessing learning outcomes of the discipline are regulated by the Regulations on the current control of progress and interim attestation of students in higher education programmes and the Regulations on the scoring and rating system.

A grading and rating system is used to assess the learning outcomes of the discipline:

The final control of the discipline is an examination (or a differentiated test), the final grade being formed in accordance with the scale given in the table below:

Points	Grade
<55	Not passed
>=55	Passed

Grading scale

2 (points to 54)	Demonstrates a lack of understanding of the problem. Many of the requirements of the assignment are not met. An initial perception of the material is demonstrated. The work is incomplete and/or plagiarised.
3 (points 55-69)	Demonstrates a partial understanding of the problem. Most of the requirements of the task have been met. Mastery of the elements of the assigned material. The material is mostly clear and coherent.
4 (points 70-84)	Demonstrates considerable understanding of the issue by the discipline. All requirements of the assignment are fulfilled. The content of the completed tasks is disclosed and examined from different perspectives.
5 (points 85-100)	Demonstrates full understanding of the problem. All requirements of the assignment are fulfilled. Demonstrates proficiency in the discipline. The completed assignments are holistic, complete, structured, present different points of view and demonstrate creativity.