State Final Examinations	Academic Year: 2018/2019
Master's Degree Studies Program:	Engineering Informatics
Study Branch:	Security Technologies, Systems and Management
Study Focus:	Technical, Management

Security Systems Technical Resources

Compulsory Subject

1. Intruder and Hold-up Systems, (I&HAS) – Their determination, block diagrams, bus-connected devices, programming methods, basic system modes, communication methods with alarm receiving centres.
2. Fire Detection and Alarm Systems, (FS) – Their determination, block diagrams, insulator activity principles, modes of operation (DAY, NIGHT), fire brigade key safes, fire brigade service facilities – their determination, operation principles, fire detectors - types, operation principles.
3. Access Control Systems, (ACCESS) – Their determination, block diagrams, the contents of database system tables and their operation principles, other applications of access systems, identification of biometric features and their capture.
4. Magswipe Cards - Card types and their properties, the RS232 interface, the Wiegand interface, RFID cards, the principles of data transfer between card and reader - (load modulation); unidirectional and bidirectional authentication for RFID cards.
5. Winpack Physical Access Systems - Their arrangement and communication interfaces, the connection of motion detectors and cameras to the access system, programming panels, time zones and access privileges.
6. CCTV Systems Legislative Requirements – The operation of camera systems from the perspective of Act No. 101/2000 Coll., On the Protection of Personal Data.
7. Basic Image Capture - Digitisation, colour models, image compression and video compression principles, additional camera functions: Electronic Shutter Function - BLC, PWI, GAMA, White Balance, Video Sync.
8. Analogue and Digital Camera Design - Basic camera elements: lens and their parameters, apertures and their functions, CCD, CMOS and DPS sensors; Camera accessories: covers and holders, positioning heads, dome cameras, remote control, infrared illumination.
9. Closed Circuit Televisions, (CCTV) - structures, camera switches, image dividers, multiplexers, cross-fields, video detectors; video transmission - metallic lead, fibre-optic transmission, wireless data transfer.
10. Camera System Imaging Units - Basic projector parameters, CRT, LCD and DLP projectors; Image Recording: VCR analogue recording, slow-motion video recorders; digital DVR recording, recording media for digital video recording.
11. Technical Aids for Performing Link and Radio Tapping - Operation principles, technical aids for the detection of tapping.
12. Electromagnetic Compatibility Principles - The division of EMC, legal and technical requirements, a classification of interference signals, electromagnetic radiation - (interference).
13. Electromagnetic Susceptibility - Definition, reasons and criteria for classification, interference reduction techniques.
14. Electromagnetic Emissions of Intruder and Hold-up Alarm Systems Measurement - A general measurement schematic, classification, requirements and measurement procedures, measurement devices and environment.

15. Intruder and Hold-up Alarm Systems Security Levels – The advanced functions of motion detectors - (PIR, dual detectors, laser detectors, video detection).
16. Identification Methods by Means of Items - Identification class, contact and contactless cards (RFID), operation principles, advantages and disadvantages, Wiegand effect cards, principles, advantages and disadvantages.
17. Biometric Identification Methods used in Practice, (e.g. Fingerprints, Facial Recognition) - Principles of functions and properties, advantages and disadvantages of biometric readers.
18. Optical Fibres - Physical transfer principles, key long-distance transmission parameters, optical fibre types, signal apertures, numerical apertures.
19. Signal Concept Definition - Basic criteria for signal-sorting and examples of signals from individual groups; Signal Modulation, Principles, Variants, Applications and Application Areas.
20. Field-bus Characteristics - Typical parameters and their comparison with similar parameters of laboratory buses, CAN bus characteristics and application areas.