State Final Examinations	Academic Year: 2019/2020
Master's Degree Studies Program:	Engineering Informatics
Study Branch:	Integrated Systems in Buildings

Security Systems Technologies

1. **Motion Detectors** – Differentiation and distribution, electromechanical motion detectors, classification, the operational principles of each type, their method(s) of use, magnetic contacts, glass breakage detectors, contact, strain detectors, piezoelectric detectors.
2. **Solenoid Motion Detectors** – Principles of activity of each type, method(s) of use, passive motion detectors: passive infrared detectors, optical systems (e.g. Fresnel lenses, mirror systems).
3. **Electromagnetic Motion Detectors** – Principles of activity of each type, method(s) of use, active motion detectors: microwave detectors, infrared barriers, barriers, slotted cables.
4. **Electro-acoustic Motion Detectors** – Principles of activity of each type, application methods, ultrasonic sensors, proximity detectors, glass breakage detectors, microphone cables.
5. **Fire Alarms** – Their differentiation and distribution, linear and point fire detectors, principle(s) of operation of each type, method(s) of use, ionization smoke detectors, optical smoke detectors, fire-heat detectors, flaming-fire detectors.
6. **Security X-Rays** – Their physical nature and mode of operation, the specifics of security X-rays, security screening principles.
7. **Security System Alarms (ESS)** – Their identification, block diagrams, working principles, ways to connect detectors, communication with the ARC.
8. **Electronic Fire Alarm Systems (EFAS)** – Their identification, block diagrams, working principles, fire-detector connection, modes of operation, the alarm-raising procedure in service mode.
9. **Entry Control Systems (ACCESS)** – Their determination, block diagrams, the database system tables´ content, working principle(s), further applications of access control systems, smart cards, other identifying features.
10. **Practical Uses of Biometrics** (e.g. fingerprint, face recognition) – The principle functions and features, advantages and disadvantages of biometric readers, contact and contactless cards.
11. **Camera Surveillance Systems (CCTV)** – Video-making principles, basic functions, analogue CCTV systems, operation principles, block diagrams, camera systems´ elements, and standards.
12. **Centralized Protection Counters (CPC)** – Determining principles, block diagrams, Emergency Response Service (ERS), communication channels - advantages, disadvantages, transmission formats, telephone messages, radio or mobile networks.
13. **Technical Requirements for Security Alarm System Components** – Electromagnetic compatibility, electrical safety, radio and telecommunications equipment, conformity assessment according to appropriate government regulations.
14. **Security Alarm System Project Documentation** – Structure, content, types, and differences. Zoning Decision Documentation, building permit documentation, detailed transfer and performance documentation.
15. **Building Security Assessments** – Technical and physical factors influencing security alarm systems design, guarded objects (sites) building construction, the effect(s) of the internal and external environments on the object (site), threats and risks to the object (site).

16. **The Technical Principles of Locating Security Alarm System Components** – Location/siting principles, space type technical protection selection (perimeter, coverage, spatial, subjective), installation, false alarm criteria of different types of detectors.
17. **Establishing Security Alarm Systems** – The approach process, technical aspects and documentation, project assignment, security alarm systems design and proposal, building design review technical assessment, implementation preparations, implementation, inspection and commissioning documentation.
18. **Integrated Alarm System Components Technical Requirements** – Electromagnetic compatibility, electrical safety, radio and telecommunications equipment.
19. **Integrated Alarm System Requirements** – Design, central control devices, signals, power, and timing. Integrated alarm system configuration types.
20. **Bus Systems for Security Systems Technology in Buildings** – Intelligent buildings and their requirements, bus systems, bus types, integrated bus alarm, security systems.