Unit X
Electronic Security Systems
Unit Objectives

**Use** the Building Vulnerability Assessment Checklist to identify electronic security system requirements that are needed to mitigate vulnerabilities.

**Describe** the electronic security system concepts and practices that warrant special attention to enhance public safety.

**Explain** the basis concepts of electronic security system components, their capabilities, and their interaction with other systems.

**Justify** selection of electronic security systems to mitigate vulnerabilities.
Electronic Security System (ESS) Concepts

• Basic concepts of site security systems
• Use of ESS
• General ESS Description
• ESS Design Considerations
Perimeter Zone

1. First Layer of Defense
2. Second Layer of Defense
3. Third Layer of Defense
Perimeter Zone

Zone 1
Zone 2
Zone 3
Zone 4
Zone 5
Zone 6
Zone 7
Zone 8
Zone 9
Zone 10
Zone 11
Intrusion Detection Systems

Motion Sensors

CCTV
Boundary Penetration Sensors

1. Structural Vibration Sensors

2. Glass Break (GB) - both acoustical and contact mount

3. Balanced Magnetic Switches (BMS) - doors, windows, and hatches

4. Passive Ultrasonic Sensors

5. Grid Wire Sensors
Volumetric Motion Sensors

Designed to detect intruder motion within the interior of the protected volume

- Microwave Motion Sensors
- Passive Infrared (PIR) Motion Sensors
- Dual Technology Sensors
- Video Motion Sensors
- Point Sensors
- Capacitance Sensors
- Pressure Mats
- Pressure Switches
Exterior Intrusion Detection

• Strain Sensitive Cable

• Fiber Optic Cable, Bistatic/Monostatic, Microwave, Active, Infrared, and Ported Coax

• Dual Technology (PIR/MW)

• Video Motion

First Layer of Defense
Fence Sensors

- Strain sensitive cables
- Taut wire sensors
- Fiber optic sensors
- Capacitance proximity sensors

First Layer of Defense
Buried Line Sensors

First Layer of Defense

Detection zone

Ported cable

3 to 4 feet

3 to 10 feet

8 to 12 feet

5 to 13 feet
Microwave Sensors

Bistatic System

Monostatic System

First Layer of Defense

FEMA
Infrared Sensors

- Active
- Passive

First or Second Layer of Defense
Video Motion Sensors

First or Second Layer of Defense
Electronic Entry Control

Coded Devices

Credential Devices

Biometric Devices

First or Second Layer of Defense
Coded Devices

Electronic Keypad Devices

Computer Controlled Keypad Devices

First, Second, or Third Layer of Defense
Credential Devices

- Magnetic Stripe Card
- Wiegand-effect Card
- Proximity Card
- Smart Card
- Bar Code

First, Second, or Third Layer of Defense
Biometric Devices

Fingerprints

Hand Geometry

Retinal Patterns
Closed Circuit Television

**Interior CCTV - alarm**
Assessment, card reader door assessment, emergency exit door assessment, and surveillance of lobbies, corridors, and open areas

**Exterior CCTV - alarm**
Assessment, individual zones and portal assessment, specific paths and areas, exclusion areas, surveillance of waterside activities

First, Second, or Third Layer of Defense
Summary

Use the Building Vulnerability Assessment Checklist to identify electronic security system requirements.

Public safety is enhanced by electronic security system (deter, detect, deny, devalue).

Electronic security systems components and capabilities interact with other systems (LAN, doors, windows, lighting, etc.).

Electronic security systems can be used to mitigate vulnerabilities.
Unit X Case Study Activity

Electronic Security Systems

Background

**Emphasis:** Various components and technology available for use in electronic security systems

FEM 426, Building Vulnerability Assessment Checklist