



Unit 3: Technology usage as a solution

3.4. Cyber security

Duration: 45 minutes

Teaching topic: Exploring Cyber Security Challenges and Solutions in Smart Cities

- Sub-topic 1 : The Nature of Cyber Threats in Smart Cities
- Sub-topic 2: Strategies for Mitigation and Prevention

Learning Aims:

- To understand the unique cyber security challenges in the context of smart cities
- To learn about effective strategies and practices to safeguard smart urban environments

Methodology:

- Watching the first presentation (15 minutes)
- Answering Multiple Choice Questions (5 minutes)
- Watching the second presentation (15 minutes)
- Answering drag&drop questions (10 minutes)

Sub-Topic One: The Nature of Cyber Threats in Smart Cities

Duration: 20 minutes

Content: This section will focus on educating learners about the various types of cyber threats that smart cities face, such as data breaches, ransomware attacks, IoT vulnerabilities, and insider threats. Real-world examples will be used to illustrate these threats and their potential impact on smart city infrastructure

Methodology

- Watching the presentation: (15 minutes)
- Answering Multiple Choice Questions (5 minutes)

Material

- PowerPoint Presentation: [3.4. Cyber security-The Nature of Cyber Threats in Smart Cities.pptx](#)
[Canva Link](#)
- Internet Connection

Sub-Topic Two: Strategies for Mitigation and Prevention

Duration: 20 minutes

Content: This section explores strategies for mitigating and preventing cyber threats, including secure planning, proactive risk management, and operational resilience.

Methodology

- Watching the presentation: (15 minutes)
- Continuing drag&drop activity (5 minutes)

Material

- PowerPoint Presentation: [3.4. Cyber security-Strategies for Mitigation and Prevention.pptx](#)
[Canva](#)
- Internet Connection

Sub-topic 1 : The Nature of Cyber Threats in Smart Cities

Multiple Choice Questions



IMG

Question: What is the primary purpose of Smart Cities?

- To increase the city's population (Incorrect)
- To use advanced technology for improving urban services (Correct)
- To reduce the cost of living (Incorrect)
- To expand urban areas (Incorrect)



IMG

Question: What role does cybersecurity play in smart cities?

- Primarily protects physical infrastructure (Incorrect)
- Ensures efficient energy use (Incorrect)

- Protects data and maintains uninterrupted city services (Correct)
- Only safeguards financial transactions (Incorrect)



IMG

Question: What are the three layers of infrastructure in a Smart City ecosystem?

- The cloud layer, the user layer, and the communication layer (Incorrect)
- The IoT layer, the data layer, and the physical layer (Incorrect)
- The edge layer, the core, and communication channels (Correct)
- The sensor layer, the processing layer, and the network layer (Incorrect)



IMG

Question: The 2014 German steel mill cyber attack is an example of:

- Data Theft (Incorrect)
- Man-in-the-Middle Attack (Incorrect)
- Physical damage due to a cyber threat (Correct)
- A DDoS attack (Incorrect)



IMG

Question: Which of the following is a common cyber threat in smart cities?

- Device Hijacking (Correct)
- Online Fraud (Incorrect)
- Internet Censorship (Incorrect)
- Email Phishing (Incorrect)



IMG

Question: Which type of attack involves a hacker intercepting communication between two systems?

- Data Theft (Incorrect)
- Man-in-the-Middle Attack (Correct)
- DDoS Attack (Incorrect)
- PDoS Attack (Incorrect)



IMG

Question: How are the physical and cyber worlds integrated in smart cities?

- Through separate but parallel systems (Incorrect)
- By using only IoT devices (Incorrect)
- Via interconnected networks and technologies (Correct)
- Physical systems are not integrated with cyber systems. (Incorrect)

Sub-topic 2 : Strategies for Mitigation and Prevention

Fill in the Blank

Drag the Words Activity- Cybersecurity in Smart Cities

Below are sentences with missing words or phrases. Drag the correct word or phrase from the list into the appropriate blank space in each sentence. Each word or phrase can only be used once. Complete all sentences correctly to finish the activity.

Cybersecurity in smart cities protects *data* and maintains *uninterrupted city services*.

In smart cities, the physical and cyber worlds are integrated via *interconnected networks and technologies*

The 2015 US Office of Personnel Management data breach was majorly caused by the use of *outdated systems and insufficient encryption*

A *Man-in-the-Middle Attack* involves a hacker intercepting communication between two systems.

A key challenge in protecting smart cities from cyber threats is *integrating legacy systems with new technologies*

The* CRASHOVERRIDE* malware disabled the Ukrainian power grid in 2016.

The primary threat posed by the Mirai Botnet is *compromising unsecured IoT devices*



The 2018 ransomware attack on Atlanta disrupted *city services and caused financial challenges*

List of Words/Phrases to Drag:

- data
- uninterrupted city services
- interconnected networks and technologies
- outdated systems and insufficient encryption
- Man-in-the-Middle Attack
- integrating legacy systems with new technologies
- CRASHOVERRIDE
- compromising unsecured IoT devices
- city services and caused financial challenges