DEPARTMENT OF COMPUTER TECHNOLOGY

Semester Plan

Course Title: Surveillance Security System

Course Code: 66652

Semester: 5th

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Objective:

- To preserve the integrity of data
- To protect the confidentiality of data
- To promote the availability of data for authorized users.

SL No.	Subject code	Name of Subject	T	P	C	Marks				
						Theory		Practical		TOTAL
						Cont. Assess	Final Exam	Cont. Assess	Final Exam	
1	66652	Surveillance Security System	1	6	3					

AIMS

After completing this course, participants will be able to:

• Interact with the customer in order to identify and understand their requirements.

• Ensure customer satisfaction

• Install and Repair dysfunctional system.

• Identify dysfunctional components through visual inspection and by use of multi meter

• To understand surveillance system installation requirement in terms of equipment, system, tools,

applications appropriate for a particular site

• Install and Configure access control device and software

• Select Suitable cameras & DVR/NVR to provide the better solution to the customers.

• Read and Comprehend signs, labels and warning

• Communicate effectively

• Follow behavior etiquettes while interacting with others

• Establishing good working relationships with colleagues within and outside the department by

coordinating Surveillance system Installation Technician

SHORT DESCRIPTION

Basic concepts of Designing the surveillance security System, Aims of a surveillance camera system,

System design elements, Conditions for equipment selections, Camera Installation, Functions of video

surveillance, Types of Camera, Lens, sensors & their functions, DVR, NVR interface, Principles of remote

access, networking Basic.

DETAIL DESCRIPTION

Theory:

1. Understand the surveillance security System.

1.1 Understand the surveillance system

1.2 Describe the knowledge of pro's & con's of surveillance

1.3 Explain the facts of video surveillance

1.4 Explain and construct various nodes of CCTV surveillance system

2. Understand the Functions of video surveillance.

2.1 Construct a video surveillance system.

2.2 Explain function of blocks and equipment required to implement a video surveillance system.

2.3 Understanding the facts about CCTV and its interfacing devices

3. Understand the Types of Camera, Lens, sensors & their functions.

3.1 Understand the various types of camera and their functionality.

3.2 Reassembling the camera & exam the parts of camera to understand their mechanism.

3.3 Selecting suitable camera after understanding

3.4 Describe different types of lens and their utility.

3.5 Differentiate & select the best camera from the same group depending on the image quality being

measured by TVL chart.

3.6 Selecting a camera for higher security application.

4. Understand the DVR, NVR interface.

4.1 Define DVR and NVR.

4.2 Explain the function of various blocks of DVR, NVR.

4.3 Understand the recording format of a DVR, NVR

4.4 DVR/NVR as interface to view and record the image transmitted by a camera.

4.5 Describe different type of attendance devices and their functionalities.

5. Understand the Principles of remote access.

5.1 Define remote access system

5.2 Describe importance/need of remote access system

5.3 Explain the nodes for remote access of a Surveillance system

5.4 Explain minimum requirement for remote access system

6. Video Signal and Control Signal Transmission.

6.1 Define data transmission media

6.2 Describe various wired media- Coaxial Cables, Twisted-pair cable transmission

and fiber optic cable.

6.3 Explain Control signal circuits of transmission media.

6.4 Describe Electrical Power Construction Requirements of video signal

6.5 Develop a Drawings to Prepare a block diagrams for Video Signal and Control Signal Transmission

6.6 Describe various types of CCTV drawing Symbols

7. Understand the networking Basic

7.1 Define Computer Network.

7.2 Define network topology

7.3 Define network protocol.

7.4 State the function of TCP/IP protocol.

7.5 Define Network Addressing

7.6 Define IP, IPv4 and IPv6.

7.7 Define Subnet Masks, Gateway address, Virtual ports, Linksys Port Forwarding, D-Link Forwarding.

7.8 State Dynamic DNS, Creating a DDNS Account

PRACTICAL:

1. Analyze Client Requirements, prepare system diagram, Quotation and get approval from client.

1.1 Contact authorized person & collect requirements

1.2 Select products against requirements

1.3 Prepare Budge against requirements

1.4 Prepare design diagram

1.5 Prepare a quotation and approve your client

2. Perform Power and Network Cable Wiring

2.1 Follow OSH practices

2.2 Identify the power source, perform wiring and Install power equipments

2.3 Collect Network diagram, perform network wiring and Install network equipments

3. Install and configure the CCTV camera.

3.1 Ensure all the tools, equipments, utilities are available in good to enable installing in single visit

3.2 Follow specification and the procedures for setting up the system

3.3 Collect power requirement of different CCTV related equipment

3.4 Use BNC connectors for joining cables and crimp them

3.5 Connect all the cables from multiple cameras to the CCTV system area.

3.6 Ensure that there are no cable joins, sharp bends during cabling.

3.7 Ensure weather proof (UV proof) cable is used in outdoors.

4. Install and configure IP (and PTZ) camera

4.1 Assign IP address for IP Cameras.

4.2 Follow installation procedures given in the manuals

4.3 Use power cable of specified thickness to connect CCTV system with power supply

4.4 Mount the CCTV camera so as to cover maximum area.

4.5 Set up the type of camera such as pan, tilt, zoom unit as per customer requirement

5. Install and configure DVR/NVR Machine.

5.1Unpack DVR/NVR as per manufacture instruction

5.2Check Physical status, mount DVR with appropriate place

5.3Install HDD

5.4Ensure that all cameras are connected to the DVR

5.5Monitor is connected (TV / PC) with video output of DVR

5.6Speaker is connected with audio output of DVR

5.7DVR link option to connect with other DVR in the network

5.8Connect the DVR to router, if required, to enable remote monitoring

5.9 Connect the power supply of DVR, monitor, speakers to set up the system

5.10 Install the appropriate software for IP network or remote monitoring

5.11 Enter the appropriate IP address to receive the video signals through IP network / internet

5.12 Connect all equipments and switch on to start the video capture

6. Setup camera controls

6.1 Identify camera specifications such as focus, lens type, zoom

6.2 Perform Controls of different options in camera such as rotation, speed of movement in pan / tilt camera

6.3 Use stable mounting structure and ensure that is not disturbed by wind or rain which would affect the video quality

6.4 Decide on the height of camera installation according to the end purpose (for example: if the visitor entering the premise is to be monitored, camera should not be placed too high and their face would not be captured)

6.5 Ensure that cameras are protected from light while installing in outdoor.

6.6 Ensure the intended area is covered during movement in case of tilt or pan type of camera.

6.7 Reduce repetition of errors

7. Survey, planning & maintenance

7.1 Making a good site survey and identifying the location of the camera to be fixed.

7.2 Selecting the suitable camera depending on the coverage area required by the customer.

7.3 Help & co- operate with the team members while taking measurement of the site.

7.4 Interfacing & connecting the camera and synchronizing it with control room.

7.5 Understand the recording & retrieving process of previously recorded footage to the controller of the system.

7.6 Convince the customer about the best available camera for better surveillance.

8. Install and Configure access control device and software

8.1 Follow workplace and lab/shop safety practices.

8.2 Install and configure Attendance device.

8.3 Install Attendance Device Software & Driver.

8.4 Connect device and enroll employee.

8.5 Configure attendance time table for employee.

8.6 Upload employee list in devices from software.

8.7 Generate Report and get output by software.

8.8 Data download & reports from devices.

REFERENCE

1 Digital video surveillance and security - Anthony c. caputo

2 CCTV, Third Edition. - Vlado Damjanovske.

3 CCTV Surveillance - Herman kruegle.

4 Digital CCTV - Emily Harwood

5 Electronic Access Control - Thomas L. Norman