



Digital Home Technology Integration (DHTI+) Certification Online – T102 280 Hours

The Home Electronics curriculum is designed to fulfill the growing requirement of trained professionals in the area of Home Technology Automation. In fact, home technology integrators anticipate seeing nearly 15 percent growth in their business, according to a January survey by *CE Pro* magazine. That follows a year in which integrators said they experienced revenue growth of 35 percent. *But home technology integration firms face a challenge in finding individuals with the right skills.*

"The worlds of consumer electronics and information technology (IT) are converging in the connected home of the 21st century," said Todd Thibodeaux, CEA's senior vice president, industry relations. "Technicians must have skills in both worlds to provide the product installation, integration, service and support that consumers need to fully enjoy a connected home lifestyle.

The Home Technology Integration self-paced curriculum is designed to fulfill the growing requirement for trained professionals in the area of Home Technology. The program will address the core competencies required to install, integrate, and troubleshoot interconnected home subsystems, including entertainment, telecommunication, lighting, HVAC, water management, security, and access control systems. The curriculum explores the design approach, working principles, processes, and standards that apply to the Home Technology industry.

Courses include:

- Home Network Design and Configuration
- Home Technology Tools, Products, and Services
- Home Entertainment Systems
- Telecommunications Systems
- Lighting, Water, and Temperature Control Systems
- Security, Surveillance, and Access Control Systems
- Home System Automation and Integration

Home Network Design and Configuration

The Home Network Design and Configuration course provides students the knowledge and skills required for designing, implementing, and maintaining a home network. Students learn about components of a home network, their functions, and procedures for installing these components. They learn about networking protocols, network operating systems, network addressing, and security issues to be managed when setting up a home network. Students also learn to troubleshoot and manage a home network.

PREREQUISITES: Recommended that you have basic computer and networking fundamentals.



COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Describe a home network and its functions.
2. Describe information distribution requirements in a home network.
3. Discuss the major components of a home network and their functions.
4. Discuss various network topologies and their advantages and disadvantages.
5. Discuss the advantages of wired and wireless networks.
6. Discuss network protocols.
7. Discuss various services of TCP/IP.
8. Describe wired and wireless network types.
9. Discuss various types of wireless protocols that can be used in home LANs.
10. Describe the network architecture and data control mechanisms in various types of networks.
11. Describe the OSI model and its layers.
12. Use the OSI model and understand Ethernet, Token Ring, FDDI, and wireless networks.
13. Discuss network addressing mechanisms.
14. Define the steps in the home network design process.
15. Explain the difference between various types of Internet connectivity.
16. Plan a home network.
17. Install and configure a home network.
18. Implement relevant aspects of network security.
19. Apply disaster recovery principles in a home network.
20. Implement network troubleshooting procedures for a home network.
21. Describe the basics of the network operating systems in use today.
22. Install and configure a network operating system.
23. Troubleshoot a home network for common problems.

MAJOR INSTRUCTIONAL AREAS:

Section I: Home Network Basics

- Describe a home network and its functions.
- Identify major hardware components required to design and build a home network.
- Discuss the functions of major components of a home network.
- Describe information distribution requirements in a home network.
- Identify the shared in-house services of a home network.
- Discuss various network topologies and their advantages and disadvantages.
- Discuss the advantages of wired and wireless networks.
- Describe the OSI model and its layers.
- Use the OSI model and understand Ethernet, Token Ring, FDDI, and wireless networks.
- Identify standard methods of device connectivity in the core networking technology.



Section II: Network Protocols

- Discuss network protocols.
- Discuss various services of TCP/IP.
- Describe wired and wireless network types.
- Discuss various types of wireless protocols that can be used in home LANs.
- Discuss wireless protocols and their associated standards.
- Compare Home RF, Bluetooth, and 802.11b protocols.

Section III: Network Addressing

- Discuss network addressing mechanisms.
- Differentiate between physical and logical addressing.
- Discuss binary address representation.
- Discuss various classes of IP addresses.
- Discuss the process of assigning network addresses to various devices on a home network.

Section IV: Installation and Configuration of a Home Network

- Define the steps involved in planning and designing home automation networks.
- Plan communication services for a home network.
- Plan network cabling for new and existing construction.
- Explain the difference between various types of Internet connectivity.
- Identify standards that apply to components of a network configuration.
- Plan a home network.
- Install and configure a home network.

Section V: Network Operating Systems

- Describe the basics of the network operating systems in use today.
- Discuss the advantages and disadvantage of various types of network operating systems.
- Install and configure a network operating system.
- Identify core operating system configuration and user settings.

Section VI: Network Services

- Identify the use of various network services.
- Install and configure network services.

Section VII: Network Security

- Implement relevant aspects of network security.
- Implement security in home network.
- Apply disaster recovery principles in a home network.

Section VIII: Network Troubleshooting

- Implement network troubleshooting procedures for a home network.
- Identify guidelines for troubleshooting network problems.
- Select factors to be considered when identifying a network problem.



- Identify techniques used to isolate and solve a network problem.
- Troubleshoot a home network.

ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

- Practice Questions
- Assignments
- Quizzes
- Laboratory Assignments
- Project
- Exam

Home Technology Tools, Products, and Services

The Home Technology: Tools, Products, and Services course presents the major commercial participants, common practices, and prevalent consumer perception of HTI benefits. The course discusses the concept of an Integrated Home Network (IHN) and the tools, equipment, and expertise required to build it. The course also describes the historical events that have led the industry to its current state as well as the working principles, design approach, and technical and marketing concepts.

Students learn how to use industry information to better qualify sales prospects for HTI products, systems, and services and to better support customers. They develop a broad understanding of the various products and systems for meeting customer requirements.

PREREQUISITES: None

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Demonstrate knowledge of the HTI field, including industry participants and participant associations, occupational opportunities, and certification programs.
2. Identify methods that are common across HTI industry products and solutions, including structured wiring and centralized control/distributed access architectures for home computing, home theater, lighting, security, and HVAC and water.
3. Define an IHN.
4. Define technical terminology, including acronyms, for the HTI industry.
5. Identify the phases in HTI projects.
6. Demonstrate an understanding of HTI projects.
7. Demonstrate the ability to present HTI products, systems, and services to residential customers, sales prospects, and other members of project teams.
8. Describe the various subsystems that make up an IHN.
9. Identify the prospects for HTI products, systems, and services that can be met with the technology available today.
10. Identify the tools required to build an IHN.
11. Identify the roles in an IHN construction project team.
12. Demonstrate an understanding of the benefits of structured wiring and centralized control/distributed access.

MAJOR INSTRUCTIONAL AREAS:



Section I: HTI and the IHN

- Discuss the historical interest of house owners in home automation systems.
- Identify the IHN as the contemporary response to the need for home automation.
- Identify the benefits and features of an IHN.
- Discuss the basic components of an IHN.
- Identify the key subsystem components of an IHN.
- Describe the importance of integrated subsystems for an IHN.
- Discuss the use of structured wiring for reliable data communication within an IHN.
- Discuss the benefits of intelligent appliances within an IHN.
- Identify the phases of HTI projects.
- Identify the occupational roles and project participants, including prospects, and customers.
- Identify the tools that each of the occupational roles utilize in an HTI project.
- Discuss growth opportunities for HTI occupational roles.

Section II: HTI Industry Participants

- Discuss the role of Consumer Electronics Association, Custom Electronic Design and Installation Association (CEDIA), and major industry participants.
- Discuss the role of CompTIA and major industry participants in the training area, including the Internet Home Alliance (IHA).
- Discuss Cisco Systems and its efforts.
- Identify other groups that impact HTI, including personnel from the building trades, licensed electricians, HVAC specialists, and plumbers.
- Discuss the impact of regulations by the Federal, State, and Municipal governments on HTI.
- Discuss the role of industrial automation solutions in HTI.

Section III: The HTI Consumer Market

- Discuss the increasing market for HTI products, systems, and services.
- Identify the profile of customers for HTI products, systems, and services.
- Identify the key benefits that customers look for from an HTI IHN.
- Identify the key components of an HTI IHN that will deliver the desired benefits to the customer.
- Describe the need for on-going customer support.
- Discuss the impact of HTI on other residential applications, including assisted living and the home office.

Section IV: HTI Technical Terms and Concepts

- Define key HTI terms and acronyms.
- Define the central control/distributed access model and its impact on HTI IHN systems.
- Discuss the importance of Ethernet networking for key features of HTI.
- Identify applications for wireless HTI components and systems and discuss the growing importance of wireless for HTI.



The Home Entertainment Systems course discusses the implementation of distributed audio and video systems in a residential location. The course introduces basic concepts of audio and video signals and discusses the devices and components that constitute home entertainment systems. It also discusses the current industry standards, rules, and regulations that govern home audio-video system installation and implementation. Students learn how to plan, design, install, and troubleshoot entertainment systems installed in a household, based on client requirements and other technical considerations. The installation of entertainment systems is discussed for both new and retrofit constructions.

PREREQUISITES: Basic Electrical and Electronic Fundamentals

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Discuss the fundamental concepts and principles of audio-video systems.
2. Identify and discuss different types of audio-video devices and components.
3. Discuss current and emerging technologies in the field of home audio-video systems.
4. Discuss industry standards and regulations that govern audio-video system installation and implementation.
5. Plan and design an audio-video system for a residential location.
6. Identify connectivity devices and methods used to install and implement audio-video systems.
7. Install a distributed audio-video system in accordance with the design plan and recommended guidelines.
8. Configure the settings of audio-video controls.
9. Configure an audio-video system to receive and display internal and external programming.
10. Configure an audio-video system to receive and display streamed programming.
11. Test an audio-video system for optimal functionality.
12. Identify the tools and techniques used to monitor an audio-video system.
13. Perform preventive maintenance of an audio-video system.
14. Diagnose and troubleshoot common problems.

MAJOR INSTRUCTIONAL AREAS:

Section I: Whole House Audio Basics

- Discuss the basic principles of sound.
- Identify the types of audio signals and differentiate between them.
- Discuss how audio signals are transmitted and received.
- Differentiate between digital and analog audio.
- Discuss the concept of distributed home audio system.
- Identify the types of media and audio file formats.
- Discuss surround sound system technology.

Section II: Audio System: Devices and Components

- Identify the source of audio signals and audio source devices.
- Identify various types of amplifiers and discuss their working.
- Identify various types of speakers and discuss their working.
- Differentiate between centralized and distributed audio systems.
- Discuss control devices used to access and control audio output.
- Describe the components and methods used for device connectivity.



Section III: Audio System: Design and Installation

- Identify customer requirements.
- Discuss how audio system implementation differs in new and retrofit constructions.
- Identify and discuss factors affecting audio system design.
- Plan the layout of an audio system to be installed in all the rooms in a house.
- Develop connectivity documentation and schematics.
- Discuss industry standards and regulations that govern audio-video system installation and implementation.
- Install and connect various audio system devices to play the audio system in the entire house.
- Perform pre-wiring and speaker system wiring.
- Perform rough-in and trim out.
- Configure audio settings.
- Configure audio system to display and receive external programming.
- Configure audio system to display and receive internal and streamed programming.

Section IV: Audio System: Testing and Troubleshooting

- Describe devices used to test audio systems.
- Discuss procedures used to test audio systems.
- Identify a problem correctly and perform troubleshooting.

Section V: Whole House Video Basics

- Discuss basic video principles.
- Identify types of video signals and differentiate between them.
- Discuss transmission and reception of video signals.
- Differentiate between digital and analog video.
- Discuss the concept of distributed home video system.
- Identify types of media and file formats of video.
- Explain the concept of aspect ratio and discuss its role in digital television.

Section VI: Video System: Devices and Components

- Identify the source of video signals and video source devices.
- Discuss devices for video display and recording.
- Differentiate between dedicated and distributed video systems.
- Discuss control devices used to access and control distributed video systems.
- Describe the components and methods used for device connectivity.

Section VII: Video System: Design and Installation

- Identify customer requirements.
- Discuss differences in video system implementation in new and retrofit constructions.
- Identify and discuss factors affecting video system design.
- Plan the layout of a whole house video system.
- Develop connectivity documentation and schematics.
- Discuss industry standards and regulations that govern audio-video system installation and implementation.
- Install and connect various video systems and connectivity devices to create a whole house video system.



- Perform rough-in and trim out.
- Configure video settings to access and control the centralized video system.
- Configure a video system to display and receive external programming.
- Configure a video system to display and receive internal and steamed programming.
- Install and configure a home theatre system.

Section VIII: Testing and Troubleshooting

- Describe devices used to test video systems.
- Discuss procedures used to test video systems.
- Identify a problem correctly and perform troubleshooting.

ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

- Practice Questions
- Assignments
- Quizzes
- Laboratory Assignments
- Project
- Exam

Telecommunication Systems

The Telecommunication Systems course introduces students to the fundamentals of the telecommunication system. Students are instructed on the design, installation, and configuration of home telecommunication systems, including advanced wired and wireless systems. They learn to install in-house services, such as voice mail, intercom, and call conferencing. Students also learn about testing and troubleshooting procedures.

PREREQUISITES: Electrical and Electronic Fundamentals

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Discuss the evolution of a communication system.
2. Discuss the benefits of a home communication system.
3. Discuss the types of home communication systems.
4. Describe the characteristics of analog and digital telephone communication systems.
5. Define the characteristics of a home telephone system.
6. Determine proper low-voltage wiring for a home telecommunication system.
7. Identify the components of a home telephone system and discuss their functions.
8. Define external services for a home telephone system.
9. Describe the telecommunications design considerations for a home network.
10. Discuss environmental factors that must be considered when designing a home telecommunication system.
11. Discuss the installation of wiring and other components for a home telephone system.
12. Install and configure a wired telecommunication system.



13. Install and configure a wireless home telecommunication system.
14. Install a KSU telephone system.
15. Plan and perform KSU programming.
16. Install and configure in-house telecommunication services.
17. Troubleshoot a home telecommunication system.
18. Describe industry standards and practices for a home telecommunication system.
19. Identify the physical telecommunications products that make up the core technology of the home network.
20. Identify the standard configuration and settings of a home telecommunication system.
21. Identify the standard methods for device connectivity with telecommunication equipment in the core technology of the home network.
22. Identify installation plans and procedures for home telecommunication systems.
23. Identify troubleshooting and maintenance plans and procedures for home telecommunication systems.

MAJOR INSTRUCTIONAL AREAS:

Section I: Home Telecommunication Fundamentals

- Discuss the evolution of a communication system.
- Discuss the benefits of a home communication system.
- Discuss the types of home communication systems.
- Describe the characteristics of analog and digital telephone communication systems.
- Define the characteristics of a home telephone system.
- Determine proper low-voltage wiring for a home telecommunication system.
- Identify the components of a home telephone system and discuss their functions.
- Define external services for a home telephone system.
- Identify the components and devices used to create a core telecommunication system for a house.

Section II: Design and Installation

- Describe telecommunication design considerations for a home network.
- Discuss environmental factors that must be considered when designing a home telecommunication system.
- Discuss the installation of wiring and other components of a home telephone system.
- Install a wired home telecommunication system.
- Install a wireless home telecommunication system.
- Describe industry standards and practices for a home telecommunication system.

Section III: In-house Telecommunication Services

- Discuss various in-house telecommunication services and their benefits.
- Install and configure voice mail.
- Install and configure intercom.
- Install and configure call conferencing.
- Install and configure extension dialing.

Section IV: Testing and Troubleshooting

- Test the telecommunication system for optimal performance.
- Discuss measures for preventive maintenance of telecommunication systems.
- Describe telecommunication testing procedures.
- Detect a problem correctly and perform troubleshooting.



ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

- Practice Questions
- Assignments
- Quizzes
- Laboratory Exercises
- Project
- Exam

Lighting, Temperature, and Water Control Systems

The Lighting, Temperature, and Water Control Systems course discusses effective management of three energy and utility-based systems — lighting, heating, ventilation, and air-conditioning (HVAC), and water — through implementation of home technology. It introduces the basic concepts of the three systems and discusses the devices and components used to automate and manage lighting, HVAC, and water systems. The course also discusses the current industry standards, rules, and regulations pertaining to the three systems.

Students learn how to plan, design, install, and configure the three systems based on client requirements and other technical considerations. They also learn how to detect and troubleshoot common problems.

PREREQUISITES: Electrical and Electronic Fundamentals

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Discuss the basic concepts of light and its characteristics.
2. Identify devices and components used in a home lighting control system.
3. Discuss industry standards and regulations that govern lighting system installation and implementation.
4. Plan and design a lighting control system for a residential location.
5. Identify connectivity devices and methods used to install and implement lighting control systems.
6. Install the components of the lighting system in accordance with the design plan and recommended guidelines.
7. Configure the settings of the lighting system for automated control.
8. Test the lighting system for optimal functionality.
9. Identify and troubleshoot common lighting problems.
10. Identify different types of heating and air-conditioning systems used in residential location.
11. Identify physical components and devices that constitute HVAC systems.
12. Discuss industry standards and regulations that govern installation and implementation of HVAC systems.
13. Plan and design an HVAC system for a residential environment.
14. Identify connectivity devices and methods used to install and implement HVAC systems.
15. Install HVAC system components in accordance with the design plan and recommended guidelines.
16. Configure HVAC system settings for predetermined and/or automated control.
17. Test HVAC system for optimal functionality.
18. Diagnose and troubleshoot common HVAC problems.
19. Identify components and devices used in home water control systems.
20. Discuss industry standards and regulations that govern installation and implementation of water control systems.
21. Plan and design a water control system for efficient management of water and energy.



22. Identify connectivity devices and methods used to install and implement water control systems.
23. Install components of the water control system in accordance with the design plan and recommended guidelines.
24. Configure settings for predetermined and/or automated control.
25. Test the water control system for optimal functioning.
26. Identify and troubleshoot common problems.

MAJOR INSTRUCTIONAL AREAS:

Section I: Lighting Fundamentals

- Understand the basic principles of lighting.
- Identify different sources of lighting in a house.
- Discuss the terms used in home lighting.
- Calculate lighting load requirements for a house.

Section II: Lighting System: Devices and Components

- Identify various types of lighting and fixtures.
- Identify wired and wireless lighting control devices.
- Discuss wiring components used while installing a lighting control system.

Section III: Lighting System: Design, Installation, and Troubleshooting

- Identify lighting requirements of a house.
- Discuss the implementation of a lighting control system in new and retrofit constructions.
- Identify factors affecting the design of a lighting control system.
- Calculate the load and wattage requirements of lighting circuits.
- Design the layout of a lighting control system.
- Develop connectivity documentation and schematics.
- Discuss industry standards on lighting control systems, wiring standards, regulations, and codes.
- Install and configure the lighting control system.
- Test the lighting control system.
- Discuss measures for preventive maintenance of lighting control systems.
- Diagnose a problem correctly and perform troubleshooting.

Section IV: HVAC Systems: Devices and Components

- Understand the principles of home temperature and climate control.
- Discuss different types of heating and air conditioning systems.
- Identify HVAC devices and components.
- Describe the components and methods used for device connectivity.

Section V: HVAC Systems: Design, Installation, and Troubleshooting

- Identify customer requirements.
- Identify factors affecting HVAC system design.
- Design the layout of the HVAC system.
- Develop connectivity documentation and schematics.



- Discuss industry standards and regulations that govern installation and implementation of the HVAC system.
- Install an HVAC system and configure HVAC zone controllers.
- Diagnose a problem correctly and perform troubleshooting.

Section VI: Water Control Systems: Devices and Components

- Understand water management fundamentals.
- Discuss different types of water control systems.
- Identify water control system devices and components.

Section VII: Water Control Systems: Design, Installation, and Troubleshooting

- Identify customer requirements.
- Identify factors affecting the design of water control systems.
- Design the layout of water control systems.
- Discuss industry standards and regulations that govern installation and implementation of water control systems.
- Install water control systems and configure controllers.
- Test and troubleshoot water control systems.

ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

- Practice Questions
- Assignments
- Quizzes
- Laboratory Exercises
- Project
- Exam

Security, Surveillance, and Access Control Systems

The Security, Surveillance, and Access Control Systems course discusses the working principles, design, and installation of home security and access control systems. It describes wired and wireless security systems and explains gadgets, such as sensors, security panels, zone commanders, and CCTVs that are a part of security systems. It also discusses various access-restriction systems such as card readers and biometric access control systems. The course delves into different types of alarms and detectors. Students learn how to plan, design, install, and configure home security and access control systems, based on client requirements and other technical considerations. They also learn how to identify and troubleshoot common problems.

PREREQUISITES: Electrical and Electronic Fundamentals

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Identify and discuss various security system devices and components used at residential locations.
2. Discuss basic home security and fire alarm systems.
3. Discuss industry standards and regulations that govern security system installation and implementation.



4. Identify the devices that are used to create a core security and surveillance system for a residential location.
5. Discuss the in-house services available with the home security and surveillance system.
6. Identify the external services available with a home security and surveillance system.
7. Plan and design a residential security system.
8. Identify connectivity devices and methods used to install and implement security systems.
9. Install security system components in accordance with the design plan and recommended guidelines.
10. Configure settings for predetermined and/or automated control.
11. Test the system for optimal functionality.
12. *Diagnose and troubleshoot common problems.*

MAJOR INSTRUCTIONAL AREAS:

Section I: Security System Fundamentals

- Discuss interior and perimeter protection.
- Identify different types of security systems.
- Discuss methods for providing access control security to a house.
- Discuss basic home security and fire alarm systems.
- Discuss the in-house services available with home security and surveillance systems.
- Identify and discuss the external services available with a home security and surveillance system.

Section II: Devices and Components

- Identify the components and devices used to create a core security and surveillance system for a house.
- Discuss various types of sensors, detectors, and alarms.
- Identify components of an access control system.
- Identify entry detection systems.
- Discuss the working of the components and devices of an access control system.

Section III: Design and Installation

- Identify customer requirements and evaluate them vis-à-vis the existing infrastructure.
- Discuss the implementation of security systems in new and retrofit constructions.
- Identify factors affecting the design of a security system.
- Design the layout of a security system.
- Develop connectivity documentation and schematics.
- Discuss industry standards, wiring standards, regulations, and codes applicable to security and access control systems.
- Install and configure a security system.
 - Establish connectivity between the security system components.
 - Set up the control panel.
 - Connect the security system with the telephone system.
 - Configure access and control settings of the security system.
- Install and connect access control devices to the access control panel.
- Configure the settings of devices in an access control system.

Section IV: Testing and Troubleshooting

- Test the security system for optimal performance.



- Discuss measures for preventive maintenance of security systems.
- Discuss causes of false alarms and measures to prevent them.
- Describe security testing regulations and procedures.
- Detect a problem correctly and perform troubleshooting.

ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

- Practice Questions
- Assignments
- Quizzes
- Laboratory Exercises
- Project
- Exam

Home System Automation and Integration

The Home System Automation and Integration course discusses how to bring all the home subsystems together and create a fully integrated home. The course describes the process of setting up and programming automation controllers for complete home automation. Students learn to troubleshoot and identify technical problems with system user interfaces or control processors. They also identify integration standards and learn about the organizations responsible for defining these standards.

PREREQUISITES:

Home Entertainment Systems

Telecommunication Systems

Lighting, Temperature, and Water Control Systems

Security, Surveillance, and Access Control Systems

COURSE COMPETENCIES:

Upon successful completion of this course, the student will be able to:

1. Discuss the process of integrating a home data network and create an integration plan for a networked home.
2. Identify the types of user interfaces for home technology devices.
3. Discuss the process of setting up a home system automation controller.
4. Setup and program a home system automation controller.
5. Build a home automation system using products such as HAI controller.
6. Discuss the use of Controller-Attached Network (CAN) in integrating a computer network and home automation systems.
7. Test and troubleshoot an automated home.
8. Identify the standards and organization associated with defining integration standards.

MAJOR INSTRUCTIONAL AREAS:

Section I: Introduction to Home System Automation and Integration

- Discuss the process of integrating a home data network.



- Identify considerations for a standard system integration design.
- Identify equipment location considerations in system integration designs.
- Identify core components in system integration designs.
- Create an integration plan for a networked home.

Section II: User Interfaces

- Identify the types of user interfaces for home technology devices.
- Discuss handheld, wall-mount, tabletop, and remote control technologies.
- Describe computer controls for home electronic devices.
- Discuss the characteristics of hands-free controls.
- Identify and discuss remote control technologies.

Section III: Automation Controllers

- Discuss the features of home automation controllers.
- Identify the communication technologies that a controller uses.
- List the steps for setting up a home system controller.
- Set up a home system controller.

Section IV: Programming Home Automation System Controllers

- Discuss different approaches used to program a home automation system controller.
- Identify the areas of a controller that require programming.
- Discuss the steps of setting up and programming a home controller.
- Program a home system controller.
- Discuss the process of backing up and securing the configuration of the controller.
- Build a home automation system using products such as HAI controller.

Section V: Integrating a Home Control System

- Explain the process of connecting a data network with a home network.
- Connect a data network with a home network.
- Install Ethernet to Serial Bridges and PLC modules.
- Discuss the use of Controller-Attached Network (CAN) in integrating a computer network and home automation systems.

Section VI: Testing and Troubleshooting

- Discuss methods for testing and ensuring the correct functioning of the automated home.
- Identify and discuss testing devices used to detect a problem in automation controllers.
- Detect the problem and resolve it.

Section VII: Industry Standards for Integration

- Discuss the manufacturer's standards.
- Identify the standards and organization associated with defining integration standards.



ADDITIONAL ACTIVITIES:

As part of the course, students will perform the following activities:

Practice Questions

- Assignments
- Quizzes
- Laboratory Assignments
- Project
- Exam