



Content
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Building Automation Training

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://www.electricityforum.com/onsite-training-rfq>

COURSE DATES AND TIMES

September 28-29 , 2020

10:00 am - 4:30 pm ET

Building Automation Systems training - This 12-hour live online instructor-led course teaches how systems operate to save energy and communicate to use the IOT (internet of things) and data to achieve the many additional savings from proper BAS system integrated design, installation, commissioning, monitoring and maintenance.

Much of today's infrastructure such as hospitals, data centers, industrial facilities and commercial and multi residential buildings have antiquated building automation systems that don't save as much money in energy and operations as is possible and don't communicate with each other to get the benefits of real time monitoring and information exchange.

Intelligent building automation systems have improved capabilities to manage energy use,

provide better comfort and controlled lighting as well as security and emergency response capabilities. IBAS can be used for many different applications some of which include energy management, demand response capabilities, renewable energy and energy storage integration, security, fire and safety applications. The purpose of this course is to learn the rapid technology advances in intelligent building automation systems and how they may be applied to suit various types of custom applications that can improve comfort, productivity, education and contribute to economic and environmental objectives.

The focus of this course is on:

- Building Automation Architecture
- Economics of BAS
- BAS Integration
- Emerging Technologies
- Hardware Innovations
- Software Innovations

What you will learn:

This course will cover many practical examples and will be interactive for students to gain a broad overall understanding of intelligent building automation systems.

Identify and describe the major components in the BAS for HVAC, Lighting, Security, Fire and Safety

Identify and describe the basic mechanical components in an HVAC automated control system

- Describe and explain the basic functions of all BAS systems
- Reference codes and standards applicable to BAS
- Describe and explain HMI basics and remote access
- Describe networking as used in BAS systems
- Explain the process of implementing BAS
- Explain Energy Conservation Strategies
- Justify control components for data collection and AI applications

- Describe relationship to building rating systems and where to look for additional references

After completion of this course, the participant will have a better understanding of:

- **Building Automation Overview:** History of Building Automation | Building Types and Key Requirements | Current and Future Trends | Delivery of BAS
- **BAS Applications:** Building HVAC Basics | Space Condition Controls | Air Handler Controls | Central Utilities | Non-ATC Systems | Energy Conservation Control Strategies| BAS Fire/Safety Systems| Security Systems | BAS Surveillance Systems
- **BAS System Solutions:** Hardware and software | DDC Controllers | Field Devices| HVAC Controls | Lighting Controls | Human Machine Interface (HMI) | Fault Detection | Digital Twin
- **BAS System Delivery:** Design and Specification | Project Engineering | Application Development | Implementation | Maintenance
- **BAS System Interoperability: ASHRAE Guideline** | Internet of Things | Division 25
- The Biggest Mistakes that companies make....and how to avoid them.
- How to save and make money with Intelligent Building Automation.

WHO SHOULD ATTEND

This Intelligent Building Automation course is designed for anyone involved with designing and providing energy management and other building automation systems or working in any facility where there is a building automation system. Students are invited to attend from a wide variety of industries, skill-levels, company sizes, and backgrounds. If you're not sure you'll fit in, or will benefit from this class, don't worry - you will - as long as you have an interest in intelligent building automations systems and the smart applications they provide.

Students who will benefit from this course include:

- Industrial, Commercial, Institutional Electrical Engineers
- Maintenance Managers
- Consulting Engineers
- Facility Managers
- Building system operators

- Building owners
- Electrical Engineers
- Electricians
- Mechanics
- Plant & Facility Maintenance Technicians
- Building Engineers
- Building Managers & Superintendents
- Plant & Facility Managers
- Multi-Craft & Cross Training Personnel
- Any Person Needing A Basic Course In Intelligent Building Automation Systems

STUDENTS RECEIVE

- 100-Page Electrical Maintenance Handbook - Value \$20 (details below)
- 1.4 Continuing Education Unit (CEU) Credits
- A **FREE** Magazine Subscription (Value \$50)
- **\$100** Coupon toward any future Electricity Forum event (restrictions apply)
- Course Materials in Paper Format

COURSE OUTLINE

Building Automation Systems Training Course Outline

DAY ONE

BUILDING AUTOMATION OVERVIEW

- History of Building Automation
- Building Types and key Requirements
- Current and Future Trends – Wired & Wireless – FDD -AI – IoT- Digital Twin
- Delivery of BAS – Designers, System Integrators and Contractors

TYPES OF BUILDING AUTOMATION AND CONTROL SYSTEMS

- Building Automation Systems (BAS)
- Building control System (BcS)
- Building management System (BmS)
- Direct Digital Control (DDC)
- Energy management and control Systems (EmcS)

BAS APPLICATIONS

- Building HVAC Basiccityforum.com/electrical-training/building-automation-training
- Air Handler controls
- Security and Door Access Systems
- BAS Surveillance systems
- BAS Fire and Safety Systems

BAS SYSTEM SOLUTIONS

- DDC controllers and sensors
- Space condition controls
- Boiler and Chiller Plants
- Air Handler controls
- Lighting controls
- Human machine Interface (HMI)

BAS COMMUNICATION PROTOCOLS

- BACnet, BACnet/IP, BACnet MS/TP
- EnOcean
- LONWORKS
- Modbus
- OPC
- Zigbee
- LoRA
- Bluetooth
- Zwave

BUILDING RAINING

COMPLIMENTARY BUILDING INITIATIVES

- BOMA BEST
- Energy Star
- LEED Accreditation
- Green Globes
- WELL, Fitwel
- Net Zero Carbon
- Associations – CABA, ISA, BOMA, IFMA, CaGBC

BENEFITS OF BUILDING AUTOMATION SYSTEMS

- Energy Savings
- Environmental Impact Reduction
- Improved Security
- DVR and CCTV Systems interaction
- Interaction with Life Safety Systems and Fire Protection
- Building maintenance using BAS / BmS with CMMS
- Operator convenience

- Power monitoring
- Security
- Closed circuit video (CCTV)
- Card and keypad access
- Elevator/escalator control
- Plumbing and water/wastewater management

DAY TWO

BAS SYSTEM DELIVERY PROCESS -New and Upgrade

- Design and Specification
- Project Engineering
- Application Development of custom functions
- Implementation of a specific applications
- Maintaining a BAS System

DAY TWO

BAS INTEGRATION

- Space condition controls
- Air Handler controls

- Air Handling Units (AHUs)
- Roof-top Units (RTUs)
- Fan coil Units (FCUs)
- Heat Pump Units (HPUs)
- Variable Air Volume boxes (VAVs)

BAS STRATEGIES FOR ENERGY REDUCTION

- Chillers control
- Boilers control and Backup
- Lighting control
- Typical Process close Loop control
- Demand Control Ventilation
- Central Utilities
- Energy conservation
- Water conservation
- Water leak Detection

BAS SYSTEM SOLUTIONS

- DDC Basics-Direct Digital control

- Local control and Field devices
- Human machine Interface (HMI) Applications
- IoT and Digital Twin -FDD -AI - ML

BAS SYSTEM INFORMATION INTERACTIONS

- Occupancy and Security System to BAS
- DVR and CCTV Systems interaction
- First Responders Digital Information
- Interaction with Life Safety Systems and Fire Protection

BAS ECONOMICS:

- Design and Life cycle costing reports for Intelligent Buildings
- Monetization of Intelligent Building
- Utility and government incentive programs

BUILDING MAINTENANCE USING BAS/BmS

- CMMS interface with BAS
- Project Haystack naming convention
- Real time monitoring benefits

BAS CASE STUDIES:

- High Performance Buildings
- Smart Buildings

Questions and Answers

COURSE TIMETABLE

Both days:

Start: 8:00 a.m.

Coffee Break: 10:00 a.m.

Lunch: 12:00 noon

Restart: 1:15 p.m.

Finish: 4:30 p.m.

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