



Course Workbook

1st Edition



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Succeed in this course

We've created several training courses for our students. As we look back at our past students we've pinpointed two things that make our students successful:

1. Access the program, watch the videos three times, and comment in the discussion board. The action of watching the videos will naturally increase the amount of information you retain.
2. Work through this workbook. This workbook was designed to help you retain key pieces of information that have a direct impact on your ability to scope and estimate building automation systems. As you move through each lesson we will ask you questions in the workbook that will help you to further expand your knowledge.

Don't skimp on these two actions. The reality is learning anything takes work. Fortunately for you, we've condensed that learning into the shortest time possible.

When you follow the two steps above you will see massive results as you work through this course.

Remember, we are here for you at any time via the discussion section.

We look forward to hearing about your success story.

To your success,

-The BAM Training Team

Module 0: Prerequisites

In this module, you will gain the prerequisite knowledge for attending this course. Please realize that this module serves as a refresher and does not replace the core knowledge gained from our BAS, IT, and HVAC courses. This modules lessons are:

- Lesson 1: What is a BAS
- Lesson 2: Parts and Pieces of a BAS
- Lesson 3: The BAS Project Process
- Lesson 4: Fundamental IT Knowledge
- Lesson 5: Fundamental Electrical Knowledge

For you to be successful in the course we need to make sure that you and I are speaking the same language. This module will define the key terms and ideas that I will refer too many times in the course.

Lesson 1: What is a BAS

Lesson Objectives:

- Explain the purpose of a building automation system

What is the main purpose of a building automation system?

What is the difference between a control system and a building automation system?

Why is it important to understand the vertical market that the building automation system will be used in?

Why is it important to understand “how” the building automation system will be used?

Lesson 2: Parts and Pieces of a BAS

Lesson Objectives:

- Describe the parts and pieces of a BAS
- Explain how each part and piece is used

What are the 4 layers of a BAS?

- 1.
- 2.
- 3.
- 4.

When is a BAS server required?

What are the four most common reasons for using a BAS server?

- 1.
- 2.
- 3.
- 4.

What is the purpose of a supervisory device?

What “server” functions do most supervisory devices have?

What are the limitations of “most” supervisory devices?

What is the purpose of a field controller?

What are the two types of field controllers?

- 1.
- 2.

Why is it important to understand the “protocol” that a field controller uses?

What are field trunks?

How can field trunks effect your bill of materials?

What are the four most common input types?

- 1.
- 2.
- 3.
- 4.



What are the four most common output types?

- 1.
- 2.
- 3.
- 4.

Lesson 3: The BAS Project Process

Lesson Objectives:

- Describe the BAS project process
- Explain each step in the project process

What are the six main steps of the project process?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Lesson 4: Fundamental IT Knowledge

Lesson Objectives:

- Explain how IT relates to BAS
- Describe the four main areas of IT

What are the four main areas of IT?

- 1.
- 2.
- 3.
- 4.

What are the three main ways IT can affect your scope and estimates?

How can IT “cost” you the job?

What are the four main areas where IT and BAS intersect?

Lesson 5: Fundamental Electrical Knowledge

Lesson Objectives:

- Demonstrate fundamental knowledge of electrical systems

What are the three electrical systems that salespersons and estimators must understand?

- 1.
- 2.
- 3.

How can electrical devices effect your scope and estimate?



Module 1: The BAS Scoping and Estimating Process

In this module, we will discuss how the BAS Scoping and Estimating processes work. This modules lessons are:

- Lesson 1: What is BAS Scoping and Estimating?
- Lesson 2: The Construction Sales Process
- Lesson 3: The Scoping and Estimating Process

In order to properly scope and estimate a BAS project you must first understand what BAS Scoping and Estimating means. For some the act of scoping and estimating a project means that they will simply come up with a loose scope and budgetary estimate. For others the scoping and estimating process involves creating a complete engineered solution.

For most the answer lies somewhere in between. In this module we will look at the different types of scopes and estimates, how scoping and estimating fits within the construction sales process, and our recommended process for handling project scopes and estimates.

Lesson 1: What is BAS Scoping and Estimating?

Lesson Objectives:

- Explain what scoping and estimating are
- Describe the synergy between scoping and estimating

What is scoping?

What is estimating?

How do scoping and estimating build off one another?

Lesson 2: The Construction Sales Process

Lesson Objectives:

- Describe the construction sales process

What are the 5 steps of the construction sales process?

- 1.
- 2.
- 3.
- 4.
- 5.

Lesson 3: The Scoping and Estimating Process

Lesson Objectives:

- Describe the scoping and estimating process

What are the four main parts of the scoping and estimating process?

- 1.
- 2.
- 3.
- 4.

Module 2: Gathering Documents

In this module we will discuss the different types of project documents that you will use during the scoping and estimating process. This modules lessons are:

- Lesson 1: Common Documents
- Lesson 2: Construction Drawings Overview
- Lesson 3: Specification Overview

One of the biggest stumbling blocks for BAS estimators and sales professionals is how to read project documents efficiently.

This is important as you often do not have time (nor is it beneficial) to read every single detail on every single document. In this module we will discuss the 20% of details that will impact 80% of your scopes and estimates.

We will also discuss what project documents are and how you can use them to your advantage as an estimator or sales professional.

Lesson 1: Common Documents

Lesson Objectives:

- Identify the common documents that are used during the scoping process

What are the two main documents used during the project?

- 1.
- 2.

What are the main phases of construction designs?

What does the acronym MEP mean?

Why is it important to clarify the sequence if it exists both in the drawings and spec?

What should you always assume before looking at a specification?

Lesson 2: Construction Drawings Overview

Lesson Objectives:

- Review construction drawings for scoping
- Describe the key areas to look at when scoping a system

Project and Template Documents:

- SaE-MEP.pdf
- Scope Matrix.xlsx

How do you avoid feeling overwhelmed by plans?

How do you read project plans?

What is a floorplan?

What are notes?

What are details?

What is an equipment schedule?



What three places would you look at to develop your scope?

- 1.
- 2.
- 3.

Lesson 3: Specification Overview

Lesson Objectives:

- Review specification for scoping
- Describe the key areas to look at when scoping a system

Project and Template Documents:

- SaE-Spec.pdf
- Scope Matrix.xlsx

What are three main parts of a specification?

What is the importance of understanding related sections?

What is the purpose of the products section of the specification?

How do parts of the specification interrelate?

Module 3: Scoping the Project

In this module we will discuss how to properly scope a project. This modules lessons are:

- Lesson 1: The Scoping process
- Lesson 2: Scoping Exercise 1
- Lesson 3: Performing Takeoffs
- Lesson 4: Scoping Exercise 2

Everything in the scoping and estimating process depends on you creating an accurate scope. Yet, so much focus is put on the estimating portion of the process and so little focus is put on the scoping portion. Why is this?

I've found that many "sales" trainers don't know how to properly scope a project. They rely on a simple process that involves counting the equipment and then using "swag" numbers to quickly build a price.

In the past that method worked just fine. But now that almost anyone can "rep" a BAS product the competition no longer allows for inflated "swag" pricing.

We deal with this by ensuring that we have a tight scope so that we can properly estimate our projects.

I'm not going to lie. At first this process will seem more cumbersome. But I guarantee that if you stick with this process you will find that this process can make your scoping and estimating faster and increase the win rate of your bids.

Let's dive in.

Lesson 1: The Scoping process

Lesson Objectives:

- Explain the scoping process
- Describe the method for reviewing spec and plans

Template Document:

- Scope Review Checklist.pdf

What are the three steps for scoping?

- 1.
- 2.
- 3.

How do you use the scope review checklist?

Lesson 2: Scoping Exercise 1

Exercise Document:

- Scoping Exercise 1

Lesson Objectives:

- Perform a scope review

Template Document:

- Scope Review Checklist.pdf

Scoping Exercise 1

Lesson 3: Performing Takeoffs

Lesson Objectives:

- Describe what takeoffs are
- Explain the takeoffs process

Template Document:

- Takeoff Template.xlsx

What are takeoffs?

What are the four steps of the takeoff process?

- 1.
- 2.
- 3.
- 4.

Lesson 4: Scoping Exercise 2

Exercise Document:

- Scoping Exercise 2

Lesson Objectives:

- Perform a takeoff

Template Document:

- Takeoff Template.xlsx

Scoping Exercise 2

Module 4: Scope Management

In this module, we will discuss the proper management of scope. This module's lessons are:

- Lesson 1: The RFI/RFC Process
- Lesson 2: RFI/RFC Management
- Lesson 3: Scope Management Exercise 1
- Lesson 4: Specification Assumptions and Exceptions
- Lesson 5: Specification Alternatives
- Lesson 6: Scope Management Exercise 2

While it is definitely important to identify scope it is arguably more important to manage the scope you identify.

You can have the “best” awareness of a project’s scope but if you cannot adequately define that scope then you will not be effective in your sales proposals.

Lesson 1: The RFI/RFC Process

Lesson Objectives:

- Explain the difference between RFI and RFC
- Describe the RFI/RFC process

What is an RFI?

What is an RFC?

What is the difference between an RFI and RFC?

What is the process of submitting an RFI or RFC?

Why would you submit an RFI or RFC?

How can RFI's and RFC's be part of your Scoping and Estimating strategy?

Lesson 2: RFI/RFC Management

Lesson Objectives:

- Describe the RFI/RFC Management process
- Demonstrate the ability to utilize the RFI/RFC Management Log

Template Document:

- RFI/RFC Log Template.xlsx
- RFI Template.docx

What are the 4 steps of managing the RFI/RFC process?

- 1.
- 2.
- 3.
- 4.

Lesson 3: Scope Management Exercise 1

Exercise Document:

- Scope Management Exercise 1

Lesson Objectives:

- Perform initial scope management

Template Document:

- RFI/RFC Log Template.xlsx
- RFI Template.docx

Scope Management Exercise

Lesson 4: Specification Assumptions and Exceptions

Lesson Objectives:

- Describe what assumptions and exceptions are
- Explain the difference between assumptions and exceptions

What are assumptions?

What are exceptions?

What is the difference between assumptions and exceptions?

What is the danger of using assumptions instead of exceptions?

Lesson 5: Specification Alternatives

Lesson Objectives:

- Describe what specification alternates are
- Explain the process of submitting alternates

What are specification alternatives?

What is the difference between an alternate and an add alternate?

How do you submit alternates and add alternates?

Lesson 6: Scope Management Exercise 2

Exercise Document:

- Scope Management Exercise 2

Lesson Objectives:

- Perform final scope management

Template Document:

- Takeoff Template.xlsx (completed from Module 3)

Scope Management Exercise

Module 5: Estimating the Sale

In this module we are going to discuss how to estimate the sale. This module's lessons are:

- Lesson 1: The Estimating Process
- Lesson 2: Estimating Materials
- Lesson 3: Estimating Exercise 1
- Lesson 4: Estimating: Labor
- Lesson 5: Estimating Exercise 1
- Lesson 6: Estimating Subcontractors
- Lesson 7: Estimating Exercise 3
- Lesson 8: Other Costs
- Lesson 9: Calculating Margin
- Lesson 10: Estimating Exercise 4

Now that you have a scope clearly defined for your project you need to price that scope. The act of pricing a scope is called estimating.

In this module we are going to discuss the estimating process and we will cover the three major buckets of costs (materials, labor, and subcontractors).

Throughout this module you will have several hands on exercises that will guide you through the estimating process.

Lesson 1: The Estimating Process

Lesson Objectives:

- Explain the scoping process
- Describe the method for reviewing spec and plans

Template Document:

- Estimating Process Checklist.pdf

What are the five steps of the estimating process?

- 1.
- 2.
- 3.
- 4.
- 5.

What are the three “buckets” of cost on most projects?

What are common other costs associated with estimates?

When do you calculate margin on a estimate?

Lesson 2: Estimating Materials

Lesson Objectives:

- Describe the process for estimating material costs

How do you estimate the cost of materials?

What are miscellaneous materials?

How do you build capacity into your estimates?

What is the concept of good, better, best?

What does the use scenario have to do with material estimates?

Lesson 3: Estimating Exercise 1

Exercise Document:

- Estimating Exercise 1

Lesson Objectives:

- Estimate the cost of materials

Template Document:

- Takeoff Template.xlsx (completed from Module 3)

Estimating Exercise 1

Lesson 4: Estimating: Labor

Lesson Objectives:

- Explain the common forms of labor
- Describe how to estimate labor

What are the five types of labor costs?

- 1.
- 2.
- 3.
- 4.
- 5.

What are the 6 common tasks performed on most jobs?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

What does it mean to choose the lowest cost for the activity?

How do you balance low cost labor and skill?

When is using the lowest cost labor a bad idea?



When would you use higher cost labor for a low-cost task?

Lesson 5: Estimating Exercise 2

Exercise Document:

- Estimating Exercise 2

Lesson Objectives:

- Estimate the cost of labor

Template Document:

- Takeoff Template.xlsx (completed from Module 5: Lesson 3)

Estimating Exercise 2

Lesson 6: Estimating Subcontractors

Lesson Objectives:

- Describe the subcontractor estimating process

What are the most important pieces of information your subcontractor needs to price your scope?

How do you draft a scope for your subcontractor to estimate?

Lesson 7: Estimating Exercise 3

Exercise Document:

- Estimating Exercise 3

Lesson Objectives:

- Estimate the cost of subcontractor labor

Template Document:

- Takeoff Template.xlsx (completed from Module 5: Lesson 5)

Estimating Exercise 3

Lesson 8: Other Costs

Lesson Objectives:

- Describe other potential project costs

What are other some other project costs?

How can you determine if you have other project costs?

Lesson 9: Calculating Margin

Lesson Objectives:

- Describe what margin is
- Explain the difference between markup and margin
- Describe how margin is calculated

What is margin?

What is markup?

What are the differences between markup and margin?

When would you use margin vs markup?

How do you calculate margin?

Can you segment margin? When would you? When would you not?

Lesson 10: Estimating Exercise 4

Exercise Document:

- Estimating Exercise 4

Lesson Objectives:

- Estimate the total cost of the project

Template Document:

- Takeoff Template.xlsx (completed from Module 5: Lesson 7)

Estimating Exercise 4

Module 6: Fundamental Sales Strategies

Now that you have a solid understanding of how the scoping and estimating process works we are going to pivot to discuss strategies that you can use during sales pursuits. This modules lessons are:

- Lesson 1: Scoping Strategies
- Lesson 2: Estimating Strategies
- Lesson 3: Specification Influence
- Lesson 4: Pricing Strategies

Having the ability to scope and estimate building automation systems will only get you so far. Now we will begin to focus on some of the key sales strategies that you can use to influence sales.

Some of what you will learn in this module may seem very foreign to you. I encourage you to discuss the strategies you learn in this module with your sales leader so that you both can find ways to incorporate these strategies in your sales processes.

Lesson 1: Scoping Strategies

Lesson Objectives:

- Describe the three most common scoping strategies

Template Document:

- Scoping Strategy Cheat Sheet

What are the three most common scoping strategies?

- 1.
- 2.
- 3.

Lesson 2: Estimating Strategies

Lesson Objectives:

- Describe the three most common estimating strategies

Template Document:

- Estimating Strategy Cheat Sheet

What are the three most common estimating strategies?

- 1.
- 2.
- 3.

Lesson 3: Specification Influence

Lesson Objectives:

- Describe how to influence the specification

Template Document:

- Specification Influence Strategy Cheat Sheet

What is specification influence?

What are the three most common specification influence strategies?

- 1.
- 2.
- 3.

Lesson 4: Pricing Strategies

Lesson Objectives:

- Describe the three most common pricing strategies

Template Document:

- Pricing Strategy Cheat Sheet

What are the three most common pricing strategies?

- 1.
- 2.
- 3.



Notes