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HARMAN
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Training Overview

**Step 1:** Sign into traininglogin.harmanpro.com for access to the HPro U learning management system. Note: If a student has an AMX.com user login, it will also serve as a login for the training website. All other students can create a new user login by clicking the ‘sign-up’ link at the top of the page.

**Step 2:** Navigate the Harman Course Catalog to view certification offerings and enroll into the desired certification curriculum(s).

**Step 3:** Certification curriculums behave like a top-down checklist. Review the optional video training content to gain initial proficiency in a subject area.

**Step 4:** Demonstrate initial proficiency by completing the prerequisite course assessment(s).

**Step 5 (optional):** Where offered, register for the Associate level InstructorLed test prep course (xx132) to receive hands-on training and InfoComm renewal units.

**Step 6:** Demonstrate conceptual proficiency by completing the Associate level certification exam(s).

**Step 7 (optional):** Enroll into, and participate in the optional Professional level Instructor Led Course (xx232) to receive additional hands-on training and InfoComm renewal units.

**Step 8:** Demonstrate solo proficiency by completing the Professional level certification exam(s).

**Step 9:** Renew your Professional level certification after 3 years via Harman Professional University “renewal” curriculum(s). Note: Students are auto-enrolled into renewal courses 60 days prior to certification expiration.
Using the HPro U Website
FREQUENTLY ASKED QUESTIONS

Are students required to watch all of the video training content for a given course?
No. Most HPro U courses are segmented in such a way to allow students an à la carte approach to training education. Harman product knowledge is gained in a variety of different ways. For some, field experience will be enough to pass our exams. For others, portions of the video training material will be required. Our goal is to empower students with the ability to choose how and when they consume the information. For the most part, video content is optional. Exams are required.

What are the online exams like?
Typical exams are 30-60 questions in length drawing random questions from large question banks. Question answer options are randomized and students are likely to see new questions and varied answer positions upon retesting. Associate level exams contain 50-75 questions and Professional level exams contain 75-125 questions.

What is a passing score for a HPro U online exam, and how many times can I take it?
HPro U online exams require an 80% or higher to pass and can be taken as many times as required to pass.

What if I need to look something up during the exam or if my computer loses connection?
The learning management system is able to keep track of your progress during the exam. Feel free to use any resource at your disposal—just as you would at a project site if a situation were to arise. Students are returned to where they left off upon returning to the learning management system.

How many times can I submit a practical exam?
Students have 3 opportunities to pass a practical exam. Students failing to achieve a passing score after a third attempt are required to take (or retake) the instructor led course for the subject.

Will I receive a confirmation for signing up for a learning track?
Yes, you will receive an email indicating you have enrolled in a learning track. If it is for an instructor led course, you will receive a reminder email prior to the beginning of the class.

How do I find my transcript(s) and/or certificate(s)?
Visit https://training.haranapro.com/#/transcripts to see your transcripts and print your certificates.

How long is my certificate valid for?
Harman Professional University certification is valid for 3 years. You will be notified by email that you have been autoenrolled into the certification renewal course 60 days prior to certification expiration. Students seeking to work on recertification steps prior to the 60 day window are able to manually self-enroll into the renewal course.

Where can I find information on traveling to an HPro U training center?
Visit https://training.haranapro.com/#/resources for travel related information about most of our training centers.

What if I have a question that is not addressed in this FAQ?
Visit online FAQ at https://training.haranapro.com/#/faq or email traininghelp@harman.com.
## Core Curriculum

**SYLLABUS & TRAINING OVERVIEW**

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<tr>
<td>CC107 Installed Audio Basics</td>
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Introduction

The Core Curriculum is a 6 part series where students are tested on general Professional AV Industry knowledge. Each Harman Professional University College will highly encourage a different combination of Core Curriculum courses based on the subject area and entry requirements for a particular course. Each Core Curriculum course consists of optional video training material and an associated online exam. Core Curriculum course completions demonstrate knowledge of industry concepts that will be needed for our training courses and do not expire.

CC101 Core Curriculum | Audio Essentials
Approximate Video Runtime: 26:06

CC102 Core Curriculum | Cabling Essentials
Approximate Video Runtime: 31:06

CC103 Core Curriculum | Control Essentials
Approximate Video Runtime: 20:08

CC104 Core Curriculum | Networking Essentials
Approximate Video Runtime: 50:19

CC105 Core Curriculum | PC Essentials
Approximate Video Runtime: 30:22

CC106 Core Curriculum | Video Essentials
Approximate Video Runtime: 38:10

CC107 Core Curriculum | Installed Audio Basics
Approximate Video Runtime: 29:45

Students must score 80% or higher on the online exams to receive a passing grade. Students obtain industry knowledge from various sources and experiences. As a result, the Core Curriculum video training materials are optional, but highly encouraged. There is no specific order in which Core Curriculum courses should be taken.

When working on HiPro U online exams, students can use any resource available to them including web searches, Harman website resources, notes from videos, industry trade organization sites, publications, and even more experienced co-workers. One purpose for our exams is to have the student seek information from different resources. Therefore, the online exams can be minimized, closed, or interrupted. The learning management system will remember where the student left off.

Each Instructor Led Course comes with it suggested Core Curriculum components. Students are highly encouraged to complete these online courses before attending a Harman Professional University Instructor Led Course.

If further assistance is needed, please contact traininghelp@harman.com or call +1-469-624-7664.
# Audio Essentials

**COURSE SYLLABUS**

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Core Curriculum</th>
<th>Audio Essentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>CC101</td>
<td></td>
</tr>
<tr>
<td>FOUND IN CURRICULUM</td>
<td>Core Curriculum</td>
<td></td>
</tr>
<tr>
<td>PREREQUISITES</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>On Demand (online only)</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>26 min (approximate video runtime)</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>This online course is a part of the HPro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic audio essentials. These skills are essential to your success in working with Harman Professional solutions.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>Audio vs sound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digital audio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio signal types</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audio signal levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Speaker system types</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DSP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microphones</td>
<td></td>
</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>Computer with internet access</td>
<td></td>
</tr>
<tr>
<td>EXAM / PRACTICAL</td>
<td>Online multiple choice (~50 question)</td>
<td></td>
</tr>
<tr>
<td>CREDITS EARNED</td>
<td>InfoComm RUs – 1</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE EARNED</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

## Core Suggestions by Brand | College

- **COLLEGE OF AMX**
  - CC102
  - CC103
  - CC104
  - CC105
  - CC106

- **COLLEGE OF BSS**
  - CC101
  - CC102
  - CC104
  - CC105
  - CC106
  - CC107

For more information, visit training.harmanpro.com
Cabling Essentials

COURSE SYLLABUS

COURSE TITLE Core Curriculum | Cabling Essentials
COURSE NUMBER CC102
FOUND IN CURRICULUM Core Curriculum
PREREQUISITES None
CLASS TYPE On Demand (online only)
DURATION 31 min (approximate video runtime)
DESCRIPTION This online course is a part of the HPro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic cabling essentials. These skills are essential to your success in working with Harman Professional solutions.

TOPICS COVERED
Parts of a cable
Wire & signal types
Cable quality
Environmental factors
Routing management

REQUIRED MATERIALS
Computer with internet access

EXAM / PRACTICAL
Online multiple choice (~40 question)

CREDITS Earned
InfoComm RUs – 1

CERTIFICATE Earned
N/A

Core Suggestions by Brand | College

[Images of logos for different colleges with course numbers listed]
# Control Essentials

**COURSE SYLLABUS**

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
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<th>Control Essentials</th>
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</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>CC103</td>
<td></td>
</tr>
<tr>
<td>FOUND IN CURRICULUM</td>
<td>Core Curriculum</td>
<td></td>
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<tr>
<td>PREREQUISITES</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>On Demand (online only)</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>20 min (approximate video runtime)</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>This online course is a part of the HPro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic control system essentials. These skills are essential to your success in working with Harman Professional solutions.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>What is a control system?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Different forms of control: ethernet, Axlink, serial, relay, I/O, and IR</td>
<td></td>
</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>Computer with internet access</td>
<td></td>
</tr>
<tr>
<td>EXAM / PRACTICAL</td>
<td>Online multiple choice (~30 question)</td>
<td></td>
</tr>
<tr>
<td>CREDITS EARNED</td>
<td>InfoComm RUs – 1</td>
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</tr>
<tr>
<td>CERTIFICATE EARNED</td>
<td>N/A</td>
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</tbody>
</table>

## Core Suggestions by Brand | College

![College of AMX](image)  
**CC102**  **CC103**  **CC104**  **CC105**  **CC106**

![College of BSS](image)  
**CC101**  **CC102**  **CC103**  **CC104**  **CC105**  **CC107**
Networking Essentials
COURSE SYLLABUS

COURSE TITLE
Core Curriculum | Networking Essentials

COURSE NUMBER
CC104

FOUND IN CURRICULUM
Core Curriculum

PREREQUISITES
None

CLASS TYPE
On Demand (online only)

DURATION
50 min (approximate video runtime)

DESCRIPTION
This online course is a part of the HP Pro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic networking essentials. These skills are essential to your success in working with Harman Professional solutions.

TOPICS COVERED
Networks
OSI model
MAC, IPv4, & IPv6 addresses
Subnet masks & gateway addresses
DNS
NAT & PAT
Hardware
Software
Ping & IPConfig utilities
Port numbers
Unicast & multicast
802.1x security

REQUIRED MATERIALS
Computer with internet access

EXAM / PRACTICAL
Online multiple choice (~30 question)

CREDITS Earned
InfoComm RUs – 1.5

CERTIFICATE Earned
N/A

Core Suggestions by Brand | College

COLLEGE OF AMX
CC102 CC103 CC104 CC105 CC106

COLLEGE OF BSS
CC101 CC104 CC105 CC107
## PC Essentials

### COURSE SYLLABUS

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Core Curriculum</th>
<th>PC Essentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>CC105</td>
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<tr>
<td>FOUND IN CURRICULUM</td>
<td>Core Curriculum</td>
<td></td>
</tr>
<tr>
<td>PREREQUISITES</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>On Demand (online only)</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>30 min (approximate video runtime)</td>
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</tr>
<tr>
<td>DESCRIPTION</td>
<td>This online course is a part of the HPro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic PC skills. These skills are essential to your success in working with Harman Professional solutions.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software</td>
<td></td>
</tr>
<tr>
<td></td>
<td>File types</td>
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<tr>
<td></td>
<td>Microsoft Windows</td>
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<tr>
<td></td>
<td>Application install and uninstall</td>
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<td></td>
<td>Quick-key basics</td>
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<tr>
<td></td>
<td>Network and USB</td>
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</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>Computer with internet access</td>
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<tr>
<td>EXAM / PRACTICAL</td>
<td>Online multiple choice (~40 question)</td>
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<tr>
<td>CREDITS EARNED</td>
<td>InfoComm RUs – 1</td>
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<td>CERTIFICATE EARNED</td>
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### Core Suggestions by Brand | College

- **College of AMX**
  - CC102
  - CC103
  - CC104
  - CC105
  - CC106

- **College of BSS**
  - CC101
  - CC104
  - CC105
  - CC107
Video Essentials

COURSE SYLLABUS

COURSE TITLE
Core Curriculum | Video Essentials

COURSE NUMBER
CC106

FOUND IN CURRICULUM
Core Curriculum

PREREQUISITES
None

CLASS TYPE
On Demand (online only)

DURATION
38 min (approximate video runtime)

DESCRIPTION
This online course is a part of the HPro U Core Curriculum. The objective of this course is to ensure a baseline level of proficiency in the subject of basic video signal essentials. These skills are essential to your success in working with Harman Professional solutions.

TOPICS COVERED
- Frame and refresh rates
- Scanning methods
- Resolution
- Aspect ratio
- Analog and digital signal types
- EDID
- HDCP
- Scaling

REQUIRED MATERIALS
Computer with internet access

EXAM / PRACTICAL
Online multiple choice (~45 question)

CREDITS EARNED
InfoComm RUs – 1

CERTIFICATE EARNED
N/A

CoreSuggestions by Brand | College

[Images of college logos with course numbers]

CC101  CC102  CC103  CC104  CC105  CC106  CC107
Installed Audio Basics

Core Suggestions by Brand | College

<table>
<thead>
<tr>
<th>COLLEGE OF AMX</th>
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<tbody>
<tr>
<td>COLLEGE OF BSS</td>
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<td>CC102</td>
<td>CC103</td>
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<td>CC105</td>
</tr>
</tbody>
</table>

This online course is an addendum to the content found in Audio Essentials. As we looked at this core competency, we realized we were missing some elements such as the audio chain and how these pieces fit together; gating, ducking, compression and other digital processing terms that were not deeply discussed. This group of videos will fill in any gaps in your basic understanding of audio and how it works in the installed audio world.

TOPICS COVERED
- Microphones
- Mixers
- Digital Signal Processors (DSP)
- Amplifier
- Loudspeakers

REQUIRED MATERIALS
- Computer with internet access

EXAM / PRACTICAL
- N/A

CREDITS EARNED
- InfoComm RUs – TBD

CERTIFICATE EARNED
- N/A
# College of AMX Certifications

## HCCA & HCCP — Design

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<th>Course Name</th>
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</thead>
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</tr>
<tr>
<td>CD132</td>
<td>Introduction to Control System Design (Instructor Led)</td>
<td>20</td>
</tr>
<tr>
<td>CD232</td>
<td>AMX Designer</td>
<td>Control System Design for AV Professionals (Instructor Led)</td>
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## HCCA & HCCP — Commissioning

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<td>Introduction to Control System Commissioning (Online)</td>
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<tr>
<td>CT132</td>
<td>Introduction to Control System Commissioning (Instructor Led)</td>
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<tr>
<td>CT232</td>
<td>AMX Installer</td>
<td>Control System Commissioning for AV Professionals (Instructor Led)</td>
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<tr>
<td>CT234</td>
<td>AMX SchoolView</td>
<td>Commissioning and Troubleshooting the SchoolView Solution (Instructor Led)</td>
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## HCCA & HCCP — Programming

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<td>AMX Programmer 1</td>
<td>Introduction to Netlink Programming (Online)</td>
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<td>CP132</td>
<td>AMX Programmer 1</td>
<td>Introduction to Netlink Programming (Instructor Led)</td>
</tr>
<tr>
<td>CP142</td>
<td>AMX Programming for AV Programmers (Instructor Led)</td>
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</tr>
<tr>
<td>CP231</td>
<td>AMX Programmer 2</td>
<td>Netlink Programming for AV Professionals (Online)</td>
</tr>
<tr>
<td>CP232</td>
<td>AMX Programmer 2</td>
<td>Netlink Programming for AV Professionals (Instructor Led)</td>
</tr>
<tr>
<td>CP301</td>
<td>AMX Cafe Duet</td>
<td>Java Programming for AV Professionals (Instructor Led)</td>
</tr>
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</table>

## HCCA & HCCP — Management

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<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>CM131</td>
<td>AMX RMS Admin</td>
<td>User Operations for RMS Enterprise (Online)</td>
</tr>
<tr>
<td>CM132</td>
<td>AMX RMS Admin</td>
<td>User Operations for RMS Enterprise (Instructor Led)</td>
</tr>
<tr>
<td>CM232</td>
<td>RMS Programmer</td>
<td>Netlink Programming for RMS Enterprise (Instructor Led)</td>
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## HCCP — Integration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CI232</td>
<td>Integrated Solutions for Control Programmers (Instructor Led)</td>
<td>35</td>
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## HCNA & HCNP — Design

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<td>Networked AV Design Essentials</td>
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## HCNP — Commissioning

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<td>AMX Solutions Master</td>
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Control Design Essentials (Online)

**INTRODUCTION TO CONTROL SYSTEM DESIGN**

**COURSE TITLE**
Introduction to Control System Design

**COURSE NUMBER**
CD131

**FOUND IN CURRICULUM**
STEP 1: Control Associate | Design Certification

**SUGGESTED CORE**
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

**PREREQUISITES**
None

**CLASS TYPE**
On Demand (online only)

**DURATION**
2.25 hours (approximate video runtime)

**DESCRIPTION**
This online course for AV/IT systems designers consists of several individual videos that focus on the various AMX product categories, specific features, and design considerations for our most popular products. Students who complete this online course should leave with a better understanding of the AMX product line, and how to design single room solutions.

**TOPICS COVERED**
The role of the AV/IT systems designer
- Overview of core product lines
- Introduction to Harman control product lines
- Signal management
- Network AV solutions
- Architectural connectivity
- Collaboration solutions
- AMX software applications
- Power considerations
- Designing a simple room

**REQUIRED MATERIALS**
Computer with internet access

**EXAM / PRACTICAL**
CD160—Harman Certified Control Associate | Design - Online Exam

**CREDITS EARNED**
InfoComm RUs – 1.5

**CERTIFICATE EARNED**
Harman Certified Control Associate | Design (HCCAD)

---

**Course Map to Control Designer Certification**

**SUGGESTED CORE**
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

**ASSOCIATE**
- CD131
  - On Demand or
  - Instructor Led

**PROFESSIONAL**
- CD232
  - Instructor Led
- CD260
  - Online Exam
- CD261
  - Practical Exam

---

For more information, visit training.harmanpro.com
Control Design Essentials (Instructor Led)

INTRODUCTION TO CONTROL SYSTEM DESIGN

COURSE TITLE
Introduction to Control System Design

COURSE NUMBER
CD132

FOUND IN CURRICULUM
STEP 1: Control Associate | Design Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
None

CLASS TYPE
Instructor Led

DURATION
4 hours

DESCRIPTION
This classroom course for AV/IT systems designers consists of lecture material focusing on the various AMX product categories, specific features, and design considerations for our most popular products. Students who complete this course should leave with a better understanding of the AMX product line, and how to design single room solutions.

TOPICS COVERED
The role of the AV/IT systems designer
Overview of core product lines
Introduction to Harman control product lines
Signal management
Network AV solutions
Architectural connectivity
Collaboration solutions
AMX software applications
Power considerations
Designing a simple room

REQUIRED MATERIALS
None

EXAM / PRACTICAL
CD160—Harman Certified Control Associate | Design - Online Exam

CREDITS EARNED
N/A

CERTIFICATE EARNED
Harman Certified Control Associate | Design (HCCAD)

Course Map to Control Designer Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
CD131
On Demand or
CD132
Instructor Led

PROFESSIONAL
CD232
Instructor Led

CD260
Online Exam

CD261
Practical Exam

RENEWAL

Required:
Optional:
AMX Designer
CONTROL SYSTEM DESIGN FOR AV PROFESSIONALS

COURSE TITLE
AMX Designer | Control System Design for AV Professionals

COURSE NUMBER
CD232

FOUND IN CURRICULUM
STEP 2: Control Professional | Design Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Control Associate | Design (HCC-A)

CLASS TYPE
Instructor Led

DURATION
1 day

DESCRIPTION
This classroom course is intended for systems designers and consultants focused on larger multi-room AV/IT solutions using various products within the AMX product portfolio. Students will be exposed to various design challenges ranging from the smallest of room types to large multibuilding projects, and will prep for completion of the Harman Certified Control Professional | Design Practical Exam (CD261).

TOPICS COVERED
Small, medium & large room designs
Multiroom and multibuilding designs
Utilizing product knowledge from CD131 - Introduction to Control System Design
Collaborating with other students to create design solutions
Compare and contrast design solutions presented in class

HANDSON exercises to solve common AV/IT design challenges with instructor feedback

REQUIRED MATERIALS
Basic computer drawing software (MS Publisher, MS PowerPoint, MS Visio, or similar)
Convert/export to PDF capability

EXAM / PRACTICAL
CD260 - Harman Certified Control Professional | Design - Online Exam
CD261 - Harman Certified Control Professional | Design - Practical

CREDITS EARNED
InfoComm RUs = 4

CERTIFICATE EARNED
Harman Certified Control Professional | Design (HCCP-D)

Course Map to Control Designer Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
CD131
On Demand or
CD132
Instructor Led

CD160
Online Exam

PROFESSIONAL
CD232
Instructor Led

CD260
Online Exam

CD261
Practical Exam

RENEWAL
Commissioning Essentials (Online)
INTRODUCTION TO CONTROL SYSTEM COMMISSIONING

COURSE TITLE
Introduction to Control System Commissioning

COURSE NUMBER
CT131

FOUND IN CURRICULUM
STEP 1: Control Associate | Commissioning Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum: Audio, Cabling, Control, Video, Networking, PC

PREREQUISITIES
None

CLASS TYPE
On Demand (online only)

DURATION
2 hours (approximate video runtime)

DESCRIPTION
This online course for installation technicians consists of several individual videos that focus on devices settings, ports, systems, master communications, file transfers, software tools, and basic troubleshooting methods.

TOPICS COVERED
Introduction to AMX commissioning
D.P.S | device addressing
Master controller communications
AMX software tools
Master-to-master communication
File transfer
DXLink & iCSLan configuration
Web interfaces - controllers, DVX, DGX
Front panel controls for Enova devices
Touch panels

REQUIRED MATERIALS
Computer with internet access

EXAM / PRACTICAL
CT160 Harman Certified Control Associate | Commissioning - Online Exam

CREDITS EARNED
InfoComm RUs – 1

CERTIFICATE EARNED
Harman Certified Control Associate | Commissioning (HCCAC)

---

Course Map to Control Technician Certification

SUGGESTED CORE
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

ASSOCIATE
- CT131
  On Demand or
  CT132
  Instructor Led

PROFESSIONAL
- CT232
  Instructor Led
- CT260
  Online Exam

RENEWAL

Required
Optional
Commissioning Essentials (Instructor Led)

INTRODUCTION TO CONTROL SYSTEM COMMISSIONING

COURSE TITLE
Introduction to Control System Commissioning

COURSE NUMBER
CT132

FOUND IN CURRICULUM
STEP 1: Control Associate | Commissioning Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
None

CLASS TYPE
Instructor Led

DURATION
4 hours

DESCRIPTION
This classroom course for installation technicians consists of lecture material that focuses on device settings, ports, systems, master communications, file transfers, software tools, and basic troubleshooting methods.

TOPICS COVERED
Introduction to AMX commissioning
D.P.S | device addressing
Master controller communications
AMX software tools
MasterTo-master communication
File transfer
DXMLink & ICS Lan configuration
Web interfaces - controllers, DVX, DGX
Front panel controls for Enova devices
Touch panels

REQUIRED MATERIALS
None

EXAM / PRACTICAL
CT160 Harman Certified Control Associate | Commissioning - Online Exam

CREDITS EARNED
N/A

CERTIFICATE EARNED
Harman Certified Control Associate | Commissioning (HCCAC)

Course Map to Control Technician Certification

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<th>PROFESSIONAL</th>
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<td>CC101</td>
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<tr>
<td></td>
<td>Online Exam</td>
<td>Online Exam</td>
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For more information, visit training.harmanpro.com
AMX Technician
CONTROL SYSTEM COMMISSIONING FOR AV PROFESSIONALS

COURSE TITLE
AMX Installer | Control System Commissioning for AV Professionals

COURSE NUMBER
CT232

FOUND IN CURRICULUM
STEP 2: Control Professional | Commissioning Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Control Associate | Commissioning (HCCAC)

CLASS TYPE
Instructor Led

DURATION
3 days

DESCRIPTION
This instructor-led course focuses on the role of the installation technician and dives further into troubleshooting skills and techniques required at today's demanding job sites. This test prep course will expose technicians to a multitude of tools and techniques as they work through a number of hands-on scenarios involving the assembly and configuration of various system types. These exercises will expose technicians to a wide range of systems from the smallest point-to-point solution all the way up to a larger master-to-master solution. Students will engage with AMX technologies like DLink, Massio Controlpads, DVX & DNX systems, ICSEan expansion boxes, EDID settings, and DSP settings found on the Enova DVX.

TOPICS COVERED
Small to multiroom setup and configuration
Practice using AMX tools for setup and configuration
Testing connectivity and device communication
Assessing what is a hardware issue versus a software issue
Hands-on practice with a variety of AMX devices
Utilizing information learned from CT131/CT132 in a "live" environment

REQUIRED MATERIALS
None

EXAM / PRACTICAL
CT260 Harman Certified Control Professional | Commissioning - Online Exam

CREDITS EARNED
InfoComm RUs – 12

CERTIFICATE EARNED
Harman Certified Control Professional | Commissioning (HCCPC)

Course Map to Control Technician Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
CT131
On Demand or
CT132
Instructor Led

PROFESSIONAL
CT232
Instructor Led
CT260
Online Exam

RENEWAL
# AMX SchoolView

**COMMISSIONING AND TROUBLESHOOTING**

<table>
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<th>AMX SchoolView</th>
<th>Commissioning and Troubleshooting</th>
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<td>COURSE NUMBER</td>
<td>CT234</td>
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<td>FOUND IN CURRICULUM</td>
<td>STEP 2: Control Professional</td>
<td>Commissioning Certification</td>
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<tr>
<td>SUGGESTED CORE</td>
<td>CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC</td>
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<tr>
<td>PREREQUISITES</td>
<td>Harman Certified Control Associate</td>
<td>Commissioning (HCAC)</td>
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<td></td>
<td>Prior Completion, or Concurrent Enrollment: CT232AMX Installer</td>
<td>Control System Commissioning for AV Professionals</td>
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<tr>
<td>CLASS TYPE</td>
<td>Instructor Led</td>
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<tr>
<td>DURATION</td>
<td>1 day</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>This classroom course for installation technicians provides the hands-on knowledge to setup &amp; configure the AMX SchoolView solution. In this course, students will learn to connect systems, configure devices, transfer files, provide security, manage remotely, and troubleshoot using the various diagnostic utilities.</td>
<td></td>
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<tr>
<td>TOPICS COVERED</td>
<td>Configuring devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security settings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connection of devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Troubleshooting methods</td>
<td></td>
</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>None</td>
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<tr>
<td>EXAM / PRACTICAL</td>
<td>N/A</td>
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<tr>
<td>CREDITS EARNED</td>
<td>InfoComm RUs = 4</td>
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<tr>
<td>CERTIFICATE EARNED</td>
<td>N/A</td>
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AMX Programmer 1 (Online)
INTRODUCTION TO NETLINX PROGRAMMING

COURSE TITLE
AMX Programmer 1 | Introduction to NetLinx Programming

COURSE NUMBER
CP131

FOUND IN CURRICULUM
STEP 1: Control Associate | Programming Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
None

CLASS TYPE
On Demand (online only)

DURATION
9 hours (approximate video runtime)

DESCRIPTION
Considering video runtime and programming exercises, this 5-day course will teach techniques for programming AMX control systems. In this course, you will learn how to program all the devices in a basic, single room NetLinx control system, including Enova switches, IR devices, relay and I/O devices (screens and lifts), and serial devices (displays). The course also includes basic touch panel design.

TOPICS COVERED
Programming fundamentals
NetLinx Studio setup & config
Workspace & file types
SNAPI
Variables & conditionals
Waits & functions
String processing
Diagnostics & notifications
Button_Event
Data_Event
Channel_Event
Level_Event
Timeline_Event
Touch panel design
Feedback
Debugging

REQUIRED MATERIALS
Computer with internet access
NetLinx Studio, Touch Panel Design 5

EXAM / PRACTICAL
CP160 Harman Certified Control Associate | Programming - Online Exam
CP161 Harman Certified Control Associate | Programming - Practical Exam

CREDITS EarnED
InfoComm RUs - 20

CERTIFICATE EARNED
Harman Certified Control Associate | Programming (HCCAP)

Course Map to Control Programmer Certification

SUGGESTED CORE

CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE

CP131
On Demand or
Instructor Led

CP132
Instructor Led or
Online Exam

CP142
Instructor Led
Practical Exam

CP160
Online Exam

CP161
Practical Exam

PROFESSIONAL

CP232
Instructor Led

CP260
Online Exam

CP261
Practical Exam

RENEWAL

Required
Optional
## AMX Programmer 1 (Instructor Led)

**INTRODUCTION TO NETLINX PROGRAMMING**

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<td>FOUND IN CURRICULUM</td>
<td>STEP 1: Control Associate</td>
<td>Programming Certification</td>
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<td>SUGGESTED CORE</td>
<td>CC101 - 106 Core Curriculum: Audio, Cabling, Control, Video, Networking, PC</td>
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<td>PREREQUISITIES</td>
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<td>CLASS TYPE</td>
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<tr>
<td>DURATION</td>
<td>5 days</td>
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<tr>
<td>DESCRIPTION</td>
<td>This classroom course will teach techniques for programming AMX control systems. In this course, you will learn how to program all the devices in a basic, single room NetLinx control system, including Enova switchers, IR devices, relay and I/O devices (screens and lifts), and serial devices (displays). The course also includes basic touch panel design.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>Programming fundamentals</td>
<td>Button_Event</td>
</tr>
<tr>
<td></td>
<td>NetLinx Studio setup &amp; config</td>
<td>Data_Event</td>
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<td></td>
<td>Workspace &amp; file types</td>
<td>Channel_Event</td>
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<td>SNAP!</td>
<td>Level_Event</td>
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<td></td>
<td>Variables &amp; conditionals</td>
<td>Timeline_Event</td>
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<td></td>
<td>Waits &amp; functions</td>
<td>Touch panel design</td>
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<td></td>
<td>String processing</td>
<td>Feedback</td>
</tr>
<tr>
<td></td>
<td>Diagnostics &amp; notifications</td>
<td>Debugging</td>
</tr>
</tbody>
</table>

| REQUIRED MATERIALS   | NetLinx Studio, Touch Panel Design 5 |
| EXAM / PRACTICAL     | CP160 | Harman Certified Control Associate | Programming - Online Exam |
|                      | CP161 | Harman Certified Control Associate | Programming - Practical Exam |
| CREDITS EARNED       | InfoComm RUs - 20 |
| CERTIFICATE EARNED   | Harman Certified Control Associate | Programming (HCCAP) |

### Course Map to Control Programmer Certification

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<td></td>
<td>On Demand or Instructor Led</td>
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<tr>
<td>CC102</td>
<td>CP132</td>
<td>CP260</td>
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<tr>
<td></td>
<td>Instructor Led or Online Exam</td>
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<tr>
<td>CC103</td>
<td>CP142</td>
<td>CP261</td>
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<tr>
<td></td>
<td>Instructor Led</td>
<td>Practical Exam</td>
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<tr>
<td>CC104</td>
<td>CP160</td>
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<tr>
<td></td>
<td>Online Exam</td>
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<tr>
<td>CC105</td>
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<td></td>
<td>Practical Exam</td>
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<tr>
<td>CC106</td>
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</tbody>
</table>

**Required**

**Optional**
AMX Programming for AV Programmers

ESSENTIALS OF NETLinx PROGRAMMING FOR AV PROFESSIONALS

COURSE TITLE
AMX Programming for AV Programmers

COURSE NUMBER
CP142

FOUND IN CURRICULUM
Contact traininghelp@harman.com for registration information

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
None

CLASS TYPE
Instructor Led

DURATION
2 days

DESCRIPTION
This crash course in NetLinx Programming is aimed at industry veterans who have previously completed AV Programmer certifications in other coding languages/tools. Experienced AV programmers already understand logic, programming concepts, and how their actions in code effect output into the connected AV devices. As a result, this course provides the essential translation of “You call it this… We call it that… Type this to do that….” Outcome expectations vary by participant background and aptitude for line level coding, but prior students have departed with abilities ranging between our typical outcome expectations of Control Associate and Control Professional Programmer.

TOPICS COVERED
Programming fundamentals
NetLinx Studio setup and configuration
Workspace & file types
SNAPI
Variables & conditionals
Waits & functions
String processing
Diagnostics & notifications
Button_Event
Data_Event
Channel_Event
Level_Event
Timeline_Event
Touch panel design
Feedback
Debugging

REQUIRED MATERIALS
NetLinx Studio, Touch Panel Design 5

EXAM / PRACTICAL
CP160 Harman Certified Control Associate | Programming - Online Exam
CP161 Harman Certified Control Associate | Programming - Practical Exam

CREDITS EARNED
InfoComm RUs - B

CERTIFICATE EARNED
Harman Certified Control Associate | Programming (HCCAP)

Course Map to Control Programmer Certification
## AMX Programmer 2

**NetLinx Programming for AV Professionals**

<table>
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<th>AMX Programmer 2</th>
<th>NetLinx Programming for AV Professionals</th>
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</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>CP231</td>
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<tr>
<td>FOUND IN CURRICULUM</td>
<td>STEP 2: Control Professional</td>
<td>Programming Certification</td>
</tr>
<tr>
<td>SUGGESTED CORE</td>
<td>CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC</td>
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</tr>
<tr>
<td>PREREQUISITES</td>
<td>Harman Certified Control Associate</td>
<td>Programming (HCCA-P)</td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>On Demand (online only)</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>10 hours (approximate video runtime)</td>
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<tr>
<td>DESCRIPTION</td>
<td>This online course for advanced programmers and support personnel focuses on the intermediate techniques for programming AMX control systems. A person completing this course will be able to program a NetLinx system. In this course, you will learn how to program an intermediate to advanced NetLinx control system using hands-on, real world examples. You will learn ways to improve your code and make it more efficient. Topics include writing modules, using custom variables (structures) and sequenced events (timelines), and programming advanced master-to-master control and switching systems. You will also learn to handle gestures and near-field communication on a Modero X touch panel.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>IP communication</td>
<td>File readwrite</td>
</tr>
<tr>
<td></td>
<td>Writing modules</td>
<td>Master-to-master programming</td>
</tr>
<tr>
<td></td>
<td>Structures</td>
<td>Bitwise operation</td>
</tr>
<tr>
<td></td>
<td>Timeline_Event</td>
<td>Advanced touch panel programming</td>
</tr>
<tr>
<td></td>
<td>Custom_Events</td>
<td>Programming efficiencies</td>
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<tr>
<td>REQUIRED MATERIALS</td>
<td>NetLinx Studio, Touch Panel Design 5</td>
<td></td>
</tr>
<tr>
<td>EXAM / PRACTICAL</td>
<td>CP260 Harman Certified Control Associate</td>
<td>Programming - Online Exam</td>
</tr>
<tr>
<td></td>
<td>CP261 Harman Certified Control Associate</td>
<td>Programming - Practical Exam</td>
</tr>
<tr>
<td>CREDITS EARNED</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE EARNED</td>
<td>Harman Certified Control Professional</td>
<td>Programming (HCCP)</td>
</tr>
</tbody>
</table>

### Course Map to Control Programmer Certification

**SUGGESTED CORE**
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

**ASSOCIATE**
- CP131 (On Demand or Instructor Led)
- CP132 (On Demand or Instructor Led)
- CP142 (Instructor Led)
- CP160 (Online Exam)
- CP161 (Practical Exam)

**PROFESSIONAL**
- CP232 (Instructor Led)
- CP260 (Online Exam)
- CP261 (Practical Exam)

**RENEWAL**

For more information, visit training.harmanpro.com
AMX Programmer 2
NETLINX PROGRAMMING FOR AV PROFESSIONALS

COURSE TITLE
AMX Programmer 2 | NetLinx Programming for AV Professionals

COURSE NUMBER
CP232

FOUND IN CURRICULUM
STEP 2: Control Professional | Programming Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Control Associate | Programming (HCCA-P)

CLASS TYPE
Instructor Led

DURATION
5 days

DESCRIPTION
This classroom course for advanced programmers and support personnel focuses on the intermediate techniques for programming AMX control systems. A person completing this course will be able to program a NetLinx system. In this course, you will learn how to program an intermediate to advanced NetLinx control system using hands on, real world examples. You will learn ways to improve your code and make it more efficient. Topics include writing modules, using custom variables (structures) and sequenced events (timelines), and programming advanced master - to - master control and switching systems. You will also learn to handle gestures and near-field communication on a Modero X touch panel.

TOPICS COVERED
- IP communication
- Writing modules
- Structures
- Timeline_Event
- Custom_Events
- File read/write
- Master - to - master programming
- Bitwise operation
- Advanced touch panel programming
- Programming efficiencies

REQUIRED MATERIALS
NetLinx Studio, Touch Panel Design 5

EXAM / PRACTICAL
CP260 Harman Certified Control Associate | Programming - Online Exam
CP261 Harman Certified Control Associate | Programming - Practical Exam

CREDITS Earned
InfoComm RUs - 20

CERTIFICATE Earned
Harman Certified Control Professional | Programming (HCCRP)

Course Map to Control Programmer Certification

SUGGESTED CORE
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

ASSOCIATE
- CP131 On Demand or
- CP132 Instructor Led or
- CP132 Online Exam
- CP160 Online Exam
- CP161 Practical Exam

PROFESSIONAL
- CP232 Instructor Led
- CP260 Online Exam
- CP261 Practical Exam

RENEWAL

Required Optional
# AMX Café Duet

**JAVA PROGRAMMING FOR AV PROFESSIONALS**

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>AMX Café Duet</th>
<th>Java Programming for AV Professionals</th>
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</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>CP301</td>
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<tr>
<td>FOUND IN CURRICULUM</td>
<td>STEP 2: Control Professional</td>
<td>Programming Certification</td>
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<tr>
<td>SUGGESTED CORE</td>
<td>CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC</td>
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<tr>
<td>PREREQUISITES</td>
<td>Harman Certified Control Professional</td>
<td>Programming (HCCRP)</td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>Instructor Led</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>3 days</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>This classroom course for AV programmers uses the AMX Café Duet software to develop JAVA communication modules for third-party device control. J2ME and OSGi are covered along with AMX SNAPi device classes, methods, and components. By the end of the class, you will have had the opportunity to develop modules for serial and IP devices.</td>
<td></td>
</tr>
</tbody>
</table>

## TOPICS COVERED

- J2ME
- Eclipse IDE and Café Duet plugin
- SNAPi device classes and components
- Overriding and implementing default device methods
- Custom classes and methods
- Socket and serial communications
- Component interfaces and port assignments
- Creating NetLinx compliant Java files
- Breaking the device module paradigm
- OSGi

## REQUIRED MATERIALS

- None

## EXAM / PRACTICAL

- N/A

## CREDITS EARNED

- InfoComm RUs - 12

## CERTIFICATE EARNED

- N/A
**RMS Admin (Online)**

**USER OPERATIONS FOR RMS ENTERPRISE**

**COURSE TITLE**
AMX RMS Admin | User Operations for RMS Enterprise

**COURSE NUMBER**
CM131

**FOUND IN CURRICULUM**
STEP 1: Control Associate | Management Certification

**SUGGESTED CORE**
CC101, CC104, CC105 Core Curriculum - Audio, Networking, PC

**PREREQUISITES**
CM101 Getting Started with RMS Enterprise

**CLASS TYPE**
On Demand (online only)

**DURATION**
2.5 hours (approximate video runtime)

**DESCRIPTION**
This online course is designed for the RMS Enterprise EndUser. After completion, you will be able to navigate the RMS Enterprise work area interface and perform the most common RMS Enterprise tasks.

**TOPICS COVERED**
- Dashboard Set up
- Users and Notifications
- Locations and Asset Configurations
- Working with Asset Parameters

**REQUIRED MATERIALS**
Computer with internet access

**EXAM / PRACTICAL**
CM160—Harman Certified Control Associate | Management- Online Exam

**CREDITS EARNED**
InfoComm RUs - 1.5

**CERTIFICATE EARNED**
Harman Certified Control Associate | Management (HCCAM)

---

**Course Map to Control Management Certification**

### SUGGESTED CORE

- **CC101**
- **CC102**
- **CC103**
- **CC104**
- **CC105**
- **CC106**

### ASSOCIATE

- **CM101**
  - On Demand

- **CM131**
  - On Demand or

### PROFESSIONAL

- **CP232**
  - Instructor Led
- **CM232**
  - Instructor Led

### RENEWAL

- **CM261**
  - Practical Exam

---

3.19.2020
RMS Admin (Instructor Led)
USER OPERATIONS FOR RMS ENTERPRISE

COURSE TITLE: AMX RMS Admin | User Operations for RMS Enterprise
COURSE NUMBER: CM132
FOUND IN CURRICULUM: STEP 1: Control Associate | Management Certification
SUGGESTED CORE: CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC
PREREQUISITES: CM101 Getting Started with RMS Enterprise
CLASS TYPE: Instructor Led
DURATION: 1 day
DESCRIPTION: This classroom course is designed for the RMS Enterprise EndUser. After completion, you will be able to navigate the RMS Enterprise work area interface and perform the most common RMS Enterprise tasks.

TOPICS COVERED:
- Configuration
- Resource documents
- Work area and menu navigation
- Admin functions
- End user tasks

REQUIRED MATERIALS: None
EXAM / PRACTICAL: CM160—Harman Certified Control Associate | Management - Online Exam
CREDITS Earned: InfoComm RUs - 4
CERTIFICATE Earned: Harman Certified Control Associate | Management (HCCAM)

Course Map to Control Management Certification

SUGGESTED CORE:
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

ASSOCIATE:
- CM101 On Demand
- CM131 On Demand or
- CM132 Instructor Led
- CM160 Online Exam

PROFESSIONAL:
- CP232 or CP232 Instructor Led
- CM232 Instructor Led
- CM261 Practical Exam
RMS Programmer

NETLINX PROGRAMMING FOR RMS ENTERPRISE

COURSE TITLE
RMS Programmer | NetLinx Programming for RMS Enterprise

COURSE NUMBER
CM232

FOUND IN CURRICULUM
STEP 2: Control Professional | Management Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
CP232 AMX Programmer 2 | NetLinx Programming for AV Professionals or Harman Certified Control Professional | Programming (HCCP)
Prior Completion, or Concurrent Enrollment in CM132 RMS Admin | User Operations for RMS Enterprise

CLASS TYPE
Instructor Led

DURATION
2 days

DESCRIPTION
This classroom course helps advanced programmers implement and develop code to work with RMS. Step through instruction for the basic elements as well as working with existing code and how to code more efficiently for RMS.

TOPICS COVERED
Usage and implementation of SDK
How to implement RMS to existing code
Customizing RMS modules

REQUIRED MATERIALS
NetLinx Studio

EXAM / PRACTICAL
CM261 Harman Certified Control Professional | Management - Practical Exam

CREDITS EARNED
InfoComm RUs—8

CERTIFICATE EARNED
Harman Certified Control Professional | Management (HCCPM)

Course Map to Control Management Certification
Integrated Solutions
FOR CONTROL PROGRAMMERS

COURSE TITLE
Integrated Solutions for Control Programmers

COURSE NUMBER
CI232

FOUND IN CURRICULUM
STEP 1: Control Professional | Integration Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Control Professional | Design (HCCP-D)
Harman Certified Control Professional | Commissioning (HCCPC)
Harman Certified Control Professional | Programming (HCCRP)
Harman Certified Control Professional | Management (HCCPM)

CLASS TYPE
Instructor Led

DURATION
3 days

DESCRIPTION
This classroom course is a comprehensive look at integrating key AMX products into a full solution. Our goal is to show you how you can send video to any ‘glass’ in the building; including touch panels. We also discuss how you can control our signage and streaming video solutions from our NetLinx controllers as well as RMS.

TOPICS COVERED
Review and implementation of coding for Resource Management Suite, Enzo, and SVSI encoders & decoders
Advanced touch panel design

REQUIRED MATERIALS
None

EXAM / PRACTICAL
CI260 Harman Certified Control Professional | Int. Solutions - Online Exam
CI261 Harman Certified Control Professional | Int. Solutions - Practical Exam

CREDITS EARNED
InfoComm RU—12

CERTIFICATE EARNED
Harman Certified Control Professional | Integration (HCCP)

Course Map to Control Integration Certification

SUGGESTED CORE
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

Required
Optional

PREREQUISITES
- CI232
- CI260
- CI261

PROFESSIONAL
- CI232 Instructor Led
- CI260 Online Exam
- CI261 Practical Exam

RENEWAL
For more information, visit training.harmanpro.com
Networked AV Design Essentials
INTRODUCTION TO NETWORKED AV DESIGN

COURSE TITLE
Networked AV Design Essentials | Introduction to Networked AV Design

COURSE NUMBER
ND131

FOUND IN CURRICULUM
STEP 1: Networked AV Associate | Design Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
None

CLASS TYPE
On Demand (online only)

DURATION
1 hour (approximate video run time)

DESCRIPTION
This course focuses on the various Network AV Product families including windowing processors and recording devices. This course also covers multicast and basic networked AV concepts.

TOPICS COVERED
Networking AV Overview
Product Families (N1000, 2000, 3000)
Multicast Basics
4K and Appliance Overviews

REQUIRED MATERIALS
None

EXAM / PRACTICAL
ND160 Harman Certified Networked AV Associate | Design - Online Exam

CREDITS EARNED
InfoComm RUs – 0.5

CERTIFICATE EARNED
Harman Certified Networked AV Associate | Design (HCNA+D)

---

Course Map to Networked AV Design Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
ND131 On Demand

PROFESSIONAL
ND232 Instructor Led
ND260 Online Exam
ND261 Practical Exam

RENEWAL
SVSI Designer
NETWORKED AV DESIGN FOR AV PROFESSIONALS

COURSE TITLE
SVSI Designer | Networked AV Design for AV Professionals

COURSE NUMBER
ND232

FOUND IN CURRICULUM
STEP 1: Networked AV Professional | Design Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Networked AV Associate | Design (HCNA-D)

CLASS TYPE
Instructor Led

DURATION
1 day

DESCRIPTION
Explore the possibilities of SVSI’s Networked AV solutions including designing a system. This is a great class for System Engineers, Project Consultants, Technicians and more.

TOPICS COVERED
Networking fundamentals
Bandwidth calculations
Network topologies
SVSI hardware
Compression & latency

REQUIRED MATERIALS
None

EXAM / PRACTICAL
ND260 Harman Certified Networked AV Professional | Design - Online Exam
ND261 Harman Certified Networked AV Professional | Design - Practical Exam

CREDITS Earned
InfoComm RUs—4

CERTIFICATE Earned
Harman Certified Networked AV Professional | Design (HCNP-D)

Course Map to Networked AV Design Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
ND131 On Demand

PROFESSIONAL
ND232 Instructor Led

RENEWAL
ND260 Online Exam
ND261 Practical Exam
Networked AV Commissioning Essentials

Networked AV Commissioning Essentials | Introduction to Networked AV Commissioning

Course Map to Networked AV Commissioning Certification

SUGGESTED CORE
- CC101
- CC102
- CC103
- CC104
- CC105
- CC106

ASSOCIATE
- NT131 On Demand
- NT160 Online Exam
- NT160 Harman Certified Networked AV Associate | Commissioning - Online Exam

PROFESSIONAL
- NT232 Instructor Led
- NT260 Online Exam

RENEWAL

Harman Certified Networked AV Associate | Commissioning (HCNAC)
SVSI Technician
NETWORKED AV COMMISSIONING FOR AV PROFESSIONALS

COURSE TITLE
SVSI Technician | Networked AV Commissioning for AV Professionals

COURSE NUMBER
NT232

FOUND IN CURRICULUM
STEP 2: Networked AV Professional | Commissioning Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
Harman Certified Networked AV Associate | Commissioning (HCNA-C)

CLASS TYPE
Instructor Led

DURATION
2 days

DESCRIPTION
Learn the ins and outs of configuring and working with a true network-based audio/video system. Discuss system setup through control options, configure network switches and generate user interfaces utilizing the N-Command hardware and Panel Builder software.

TOPICS COVERED
Networking fundamentals review
Wireshark
N-Able software
Panel Builder software

REQUIRED MATERIALS
SVSI N-Able software

EXAM / PRACTICAL
NT260 Harman Certified Networked AV Professional | Commissioning - Online Exam

CREDITS EARNED
InfoComm RUs—8

CERTIFICATE EARNED
Harman Certified Networked AV Professional | Commissioning (HCNPC)

Course Map to Networked AV Commissioning Certification

SUGGESTED CORE
CC101
CC102
CC103
CC104
CC105
CC106

ASSOCIATE
NT131
On Demand

NT160
Online Exam

PROFESSIONAL
NT232
Instructor Led

NT260
Online Exam

RENEWAL
SVSI Programmer 1
INTRODUCTION TO JAVASCRIPT PROGRAMMING

COURSE TITLE
SVSI Programmer 1 | Introduction to Javascript Programming

COURSE NUMBER
NP132

FOUND IN CURRICULUM
STEP 1: Networked AV Associate | Programming Certification

SUGGESTED CORE
CC101 - 106 Core Curriculum - Audio, Cabling, Control, Video, Networking, PC

PREREQUISITES
NP101 SVSI | Getting Started with Panel Builder

CLASS TYPE
Instructor Led

DURATION
2 days

DESCRIPTION
Learn to program a single-room encoder and decoder (SVSI) solution using the PanelBuilder software tool and basic JavaScript concepts to control IR, IP and Serial devices common to audio visual solutions. Students will develop the graphical user interface (GUI) and control code to provide real time feedback for 2way controlled devices.

TOPICS COVERED
Panel Builder software
Basics of JavaScript

REQUIRED MATERIALS
Panel Builder software

EXAM / PRACTICAL
NP160 Harman Certified Networked AV Associate | Programming- Online Exam
NP161 Harman Certified Networked AV Associate | Programming- Practical Exam

CREDITS EARNED
InfoComm RUs—8

CERTIFICATE EARNED
Harman Certified Networked AV Associate | Programming (HCNA/P)

Course Map to Networked AV Programmer Certification

<table>
<thead>
<tr>
<th>SUGGESTED CORE</th>
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<tbody>
<tr>
<td>CC101</td>
</tr>
<tr>
<td>CC102</td>
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<td>CC105</td>
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<tr>
<td>CC106</td>
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</table>

<table>
<thead>
<tr>
<th>ASSOCIATE</th>
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<tbody>
<tr>
<td>NP132</td>
</tr>
<tr>
<td>NP160</td>
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<tr>
<td>NP161</td>
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</table>

Required
Optional
—What is an AMX Solutions Master?
The AMX Solutions Master (ASM) achievement is the highest honor within the College of AMX training program and recognizes individuals who have demonstrated capabilities of integrating complete AMX solutions and technologies, made up of the following Harman Professional University certifications:
# College of BSS Certifications

<table>
<thead>
<tr>
<th>Section</th>
<th>Course</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCAA &amp; HCAP — Design</td>
<td>AD131 Design Essentials</td>
<td>Introduction to Audio Design (Online)</td>
</tr>
<tr>
<td></td>
<td>AD132 Design Essentials</td>
<td>Introduction to Audio Design (Instructor Led)</td>
</tr>
<tr>
<td></td>
<td>AD232 Audio Designer</td>
<td>Audio System Design for AV Professionals (Instructor Led)</td>
</tr>
<tr>
<td>HCAA &amp; HCAP — Programming</td>
<td>AP131 Audio Programming Essentials</td>
<td>Introduction to Audio Architect (Online)</td>
</tr>
<tr>
<td></td>
<td>AP231 Audio Programming with BSS Soundweb London (Online)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>AP232 Audio Programming with BSS Soundweb London (Instructor Led)</td>
<td>49</td>
</tr>
</tbody>
</table>
College of BSS

FREQUENTLY ASKED QUESTIONS

—Do I need to complete AP131 if I have already completed the online prerequisites outside Harman Pro University within the last year?

No. Students who previously completed these prerequisites outside of the learning management system can email a copy of the prerequisite certification PDF to traininghelp@harman.com to receive credit for the above mentioned courses.

—Must I complete the online prerequisites before I can register for an instructor led course?

Yes, seats are limited, and we have to cover a lot of material in two days. We greatly appreciate you investing your time into the prerequisite material. The average student is able to complete each section within half an hour.

—I have already attended BSS Audio training courses, titled “Soundweb London Level 1” and “Soundweb London Level 2.” Those courses were based on the software application London Architect, not Audio Architect. Should I attend the new Audio Architect-based courses?

Yes. Students should attend AP232 to learn about Soundweb London within Audio Architect. While London Architect and Audio Architect are similar in many ways, they're different enough to justify your time investment into AP232. Audio Architect also allows Soundweb London hardware to do things that London Architect did not allow. Attending AP232 will keep current your Soundweb London knowledge and certifications.

—I passed the exams for the London Architect-based courses “Soundweb London Level 1” and “Soundweb London Level 2.” Do I automatically get certificates for AP232 (BSS101 and BSS201)?

Yes. Students who previously completed AA100 receive credit for AP131, and students who completed both BSS101 and BSS201 receive credit for AP232. To receive credit, email your certificate(s) of completion traininghelp@harman.com.

—I am London Architect programming covered in AP232?

No. Audio Architect is the only software application covered in AP232.
Design Essentials (Online)
INTRODUCTION TO AUDIO DESIGN

COURSE TITLE: Design Essentials | Introduction to Audio Design

COURSE NUMBER: AD131

FOUND IN CURRICULUM: STEP 1: Audio Associate | Design Certification

SUGGESTED CORE: CC101, 104, 105 Core Curriculum - Audio, Networking, PC

PREREQUISITES: None

CLASS TYPE: On Demand (online only)

DURATION: 2 hours (approximate video runtime)

DESCRIPTION: This online course is for AV/IT systems designers and consists of several individual videos focusing on integrating installed audio into a commercial space. Students who complete this course will have a better understanding of key Harman Professional Audio products and the tools needed to implement a single room audio design solution.

TOPICS COVERED:
- Ceiling Speaker Configurator software
- Distributed System Design software
- Loudspeakers (basics and product overview)
- Amplifiers (basics and product overview)
- Signal processing (basics and product overview)
- Microphones (basics and product overview)
- Mixers (basics and product overview)

REQUIRED MATERIALS: Computer with internet access

EXAM / PRACTICAL:
- AD160: Harman Certified Audio Associate | Design - Online Exam

CREDITS EARNED: InfoComm RUs – 1

CERTIFICATE EARNED: Harman Certified Audio Associate | Design (HCAAD)

Course Map to Audio Designer Certification

SUGGESTED CORE
CC101
CC104
CC105

ASSOCIATE
AD131 On Demand or
AD132 Instructor Led
AD160 Online Exam

PROFESSIONAL
AD232 Instructor Led
AD260 Online Exam
AD261 Practical Exam

RENEWAL

3.19.2020
# Design Essentials (Instructor Led)

**INTRODUCTION TO AUDIO DESIGN**

## Course Details

<table>
<thead>
<tr>
<th><strong>Course Title</strong></th>
<th>Design Essentials</th>
<th>Introduction to Audio Design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Number</strong></td>
<td>AD132</td>
<td></td>
</tr>
<tr>
<td><strong>Found in Curriculum</strong></td>
<td>STEP 1: Audio Associate</td>
<td>Design Certification</td>
</tr>
<tr>
<td><strong>Suggested Core</strong></td>
<td>CC101, 104, 105</td>
<td></td>
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<tr>
<td><strong>Prerequisites</strong></td>
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<td></td>
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<tr>
<td><strong>Class Type</strong></td>
<td>Instructor Led</td>
<td></td>
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<tr>
<td><strong>Duration</strong></td>
<td>4 hours</td>
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<tr>
<td><strong>Description</strong></td>
<td>This classroom course is for AV/IT systems designers and focuses on integrating installed audio into a commercial space. Students who complete this course will have a better understanding of key Harman Professional Audio products and the tools needed to implement a single room audio design solution.</td>
<td></td>
</tr>
</tbody>
</table>

## Topics Covered

- Ceiling Speaker Configurator software
- Distributed System Design software
- Loudspeakers (basics and product overview)
- Amplifiers (basics and product overview)
- Signal processing (basics and product overview)
- Microphones (basics and product overview)
- Mixers (basics and product overview)

## Required Materials

- None

## Exam / Practical

- AD160 Harman Certified Audio Associate | Design - Online Exam

## Credits Earned

- N/A

## Certificate Earned

- Harman Certified Audio Associate | Design (HCAA-D)

## Course Map to Audio Designer Certification

![Course Map Diagram]

- **Suggested Core**: CC101, CC104, CC105
- **Associate**: AD131 On-Demand or AD132 Instructor Led
- **Professional**: AD232 Instructor Led, AD260 Online Exam, AD261 Practical Exam
- **Renewal**: AD160 Online Exam

For more information, visit training.harmanpro.com
**Audio Designer**

**AUDIO SYSTEM DESIGN FOR AV PROFESSIONALS**

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Audio Designer</th>
<th>Audio System Design for AV Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>AD232</td>
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</tr>
<tr>
<td>FOUND IN CURRICULUM</td>
<td>STEP 2: Audio Professional</td>
<td>Design Certification</td>
</tr>
<tr>
<td>SUGGESTED CORE</td>
<td>CC101, 104, 105</td>
<td>Core Curriculum - Audio, Networking, PC</td>
</tr>
<tr>
<td>PREREQUISITES</td>
<td>Harman Certified Audio Associate</td>
<td>Design (HCAAD)</td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>Instructor Led</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>This classroom course is intended for system designers and consultants focused on integrating sound reinforcement into larger commercial applications using products from different HARMAN Professional audio families. This test prep course will help students determine the various challenges that can affect an audio design—from small huddle spaces needing additional sound reinforcement, to large cafeterias that need additional control. This course will prepare the student for completion of the Harman Certified Audio Professional</td>
<td>Design Practical Exam (AD261).</td>
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<tr>
<td>TOPICS COVERED</td>
<td>Small room design</td>
<td></td>
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<td>Video and audio conference designs</td>
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<td></td>
<td>Multi-zone designs</td>
<td></td>
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<tr>
<td></td>
<td>Calculations for acoustical variances and power requirements</td>
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</tr>
<tr>
<td></td>
<td>Hands-on exercises to solve common audio design challenges</td>
<td></td>
</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>EXAM / PRACTICAL</td>
<td>AD260 Harman Certified Audio Professional</td>
<td>Design—Online Exam</td>
</tr>
<tr>
<td></td>
<td>AD261 Harman Certified Audio Professional</td>
<td>Design—Practical Exam</td>
</tr>
<tr>
<td>CREDITS EARNED</td>
<td>InfoComm RUs—8</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE EARNED</td>
<td>Harman Certified Audio Professional</td>
<td>Design (HCAPD)</td>
</tr>
</tbody>
</table>

### Course Map to Audio Designer Certification

<table>
<thead>
<tr>
<th>SUGGESTED CORE</th>
<th>ASSOCIATE</th>
<th>PROFESSIONAL</th>
<th>RENEWAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC101</td>
<td>AD131</td>
<td>AD232</td>
<td></td>
</tr>
<tr>
<td></td>
<td>On Demand</td>
<td>Instructor Led</td>
<td></td>
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<tr>
<td></td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC104</td>
<td>AD132</td>
<td>AD260</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Instructor Led</td>
<td>Online Exam</td>
<td></td>
</tr>
<tr>
<td>CC105</td>
<td>AD160</td>
<td>AD261</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Online Exam</td>
<td>Practical Exam</td>
<td></td>
</tr>
</tbody>
</table>

**Required**

**Optional**
Audio Programming Essentials (On-Demand)

INTRODUCTION TO AUDIO ARCHITECT

COURSE TITLE
Audio Programming Essentials | Introduction to Audio Architect

COURSE NUMBER
AP131

FOUND IN CURRICULUM
STEP 1: Audio Professional | Programming Certification

SUGGESTED CORE
CC101, 104, 105 Core Curriculum - Audio, Networking, PC

PREREQUISITES
None

CLASS TYPE
On Demand (online only)

DURATION
1 hour (approximate video runtime)

DESCRIPTION
This online course helps AV/IT system programmers with an overview of the Audio Architect software. Students learn about connecting and transferring an existing file; retrieving a file from a working system; and programming for a small single room solution.

TOPICS COVERED
Audio Architect Introduction
Setting up file protection
Defining venues
Adding devices
DSP configuration
Amplified configuration
Contrio configuration
Network configuration with AA NetSetter
Matching devices
Synchronizing devices
Setting the venue to run
Retrieving the file

REQUIRED MATERIALS
Computer with Internet access

EXAM / PRACTICAL
AP160 Harman Certified Audio Associate | Programming - Online Exam

CREDITS EARNED
InfoComm RUs – 0.5

CERTIFICATE EARNED
Harman Certified Audio Associate | Programming (HCAAP)

Course Map to Audio Programmer Certification

SUGGESTED CORE
CC101
CC104
CC105

ASSOCIATE
AP131
On Demand

PROFESSIONAL
AP232
Instructor Led

AP260
Online Exam

AP261
Practical Exam

RENEWAL
Programming with Audio Architect (Online)

Audio Programming for AV Professionals

COURSE TITLE
Programming with Audio Architect

COURSE NUMBER
AP231

FOUND IN CURRICULUM
STEP 1: Audio Professional | Programming Certification

SUGGESTED CORE
CC101, 104, 105 Core Curriculum - Audio, Networking, PC

PREREQUISITES
Harman Certified Audio Associate | Programming (HCAPA)

CLASS TYPE
On Demand (online only)

DURATION
3 hours (approximate video runtime)

DESCRIPTION
This series of videos covers advanced programming concepts for Soundweb London with Audio Architect. This test prep provide information about the technologies within our award-winning product line of digital signal processors designed and manufactured by BSS audio and will prepare students for completion of the AP260 online exam and AP261 practical exam.

TOPICS COVERED
- Processing object tour
- Room combine
- BLU link programming
- Dante programming
- GPIO programming
- Parameter presets
- Linking
- Subranging
- Conditional logic
- Automixers
- Acoustic echo cancellation
- Ambient noise compensation

REQUIRED MATERIALS
- Laptop computer with 64bit Windows OS (Win7 or higher)
- Most current version of Audio Architect

EXAM / PRACTICAL
- AP260 Harman Certified Audio Professional | Programming - Online Exam
- AP261 Harman Certified Audio Professional | Programming - Practical Exam

CREDITS Earned
- InfoComm RU’s – 1.5

CERTIFICATE Earned
Harman Certified Audio Professional | Programming (HCAPP)

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Course Map to Audio Programmer Certification

<table>
<thead>
<tr>
<th>SUGGESTED CORE</th>
<th>ASSOCIATE</th>
<th>PROFESSIONAL</th>
<th>RENEWAL</th>
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</thead>
<tbody>
<tr>
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<td>AP131</td>
<td>AP231</td>
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<tr>
<td>CC104</td>
<td></td>
<td>AP232</td>
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<tr>
<td>CC105</td>
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<td>AP260</td>
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<tr>
<td></td>
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<td>AP261</td>
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</tbody>
</table>

Required
Optional
Programming with Audio Architect (Instructor Led)

Audio Programming for AV Professionals

COURSE TITLE  Programming with Audio Architect
COURSE NUMBER  AP232
FOUND IN CURRICULUM  STEP 1: Audio Professional | Programming Certification
SUGGESTED CORE  CC101, 104, 105 Core Curriculum - Audio, Networking, PC
PREREQUISITES  Harman Certified Audio Associate | Programming (HCAAP)
CLASS TYPE  Instructor Led
DURATION  2 days
DESCRIPTION  This classroom course covers advanced programming concepts for Soundweb London with Audio Architect. This test prep class provides information about the technologies within our award-winning product line of digital signal processors designed and manufactured by BSS audio, and will prepare students for the AP260 online exam and the AP261 practical exam.

TOPICS COVERED  Processing object tour, Room combining, BLU-Link programming, Dante programming, GPIO programming, Linking, Acoustic Echo Cancellation, Subranging, Ambient Noise Compensation, Automixers, Presets (Venue, Panel, Parameter, Amplifier), Conditional logic

REQUIRED MATERIALS  Laptop computer with 64bit Windows OS (Win7 or higher), Most current version of Audio Architect

EXAM / PRACTICAL  AP260 Harman Certified Audio Professional | Programming - Online Exam
                  AP261 Harman Certified Audio Professional | Programming - Practical Exam

CREDITS EARNED  InfoComm RU's—8

CERTIFICATE EARNED  Harman Certified Audio Professional | Programming (HCAAP)

Course Map to Audio Programmer Certification
College of JBL Courses

AD144 Refining Loudspeaker Choice & Positioning using 3D Modeling & Prediction (Instructor Led) .......................................................... 51
AT232 JBL | VTX 2Day Workshop (Instructor Led) ............................................................................................................................................ 52
## Refining Loudspeaker Choice & Positioning

### Using 3D Modeling & Prediction

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Refining Loudspeaker Choice &amp; Positioning using 3D Modeling &amp; Prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>AD144</td>
</tr>
<tr>
<td>FOUND IN CURRICULUM</td>
<td>N/A</td>
</tr>
<tr>
<td>SUGGESTED CORE</td>
<td>CC101, 104, 105Core Curriculum - Audio, Networking, PC</td>
</tr>
<tr>
<td>PREREQUISITES</td>
<td>Trimble SketchUp Tutorial AD144: Course Prerequisite Work</td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>Instructor Led</td>
</tr>
<tr>
<td>DURATION</td>
<td>7 hours</td>
</tr>
</tbody>
</table>

### Description

You may be good at ‘eyeballing’ a room to determine loudspeaker choice, mounting angles, expected levels and coverage, but how do you convey these elements to your customer? What document do you put into your proposals that shows that you’re not just leaving loudspeaker coverage to chance? Do you encounter proposals that require ‘the successful bidder’ to submit loudspeaker coverage plots from EASE or a similar program?

HARMAN Professional University has developed this course to help you improve your accuracy and success in the area of loudspeaker choice and placement, and to help you express to your clients that you command both the art and the science of sound system design, and are recommending to them the very best system for their needs. This course utilizes two design tools: Trimble’s Sketchup and JBL’s DDA (Digital Directivity Analysis), both of which are free to download and use. Rooms are drawn in Sketchup, then exported to DDA, where loudspeakers* are deployed and tested. As a bonus, the Sketchup model you create may be used for acoustic analysis, to help show your client how acoustic treatment would improve sound in their room. *DDA is not exclusive to JBL products. It uses .CLF (common loudspeaker format) files, which are available for most professional loudspeakers.

### Topics Covered

- Simple 3D modeling of rooms and exterior spaces
- Importing layouts from other drawing programs
- Choice, placement and aiming of loudspeakers
- Standards of sound coverage, bandwidth and level
- Strategies for successful customer buy-in and experience

### Required Materials

- 64bit PC running Windows 10, external mouse or trackball

### Exam / Practical

- N/A

### Credits Earned

- InfoComm RUs—7

### Certificate Earned

- N/A
JBL VTX Workshop

AUDIO SYSTEM COMMISSIONING FOR AV PROFESSIONALS

COURSE TITLE: JBL VTX 2-Day Workshop
COURSE NUMBER: AT232
FOUND IN CURRICULUM: N/A
SUGGESTED CORE: CC101, 104, 105
PREREQUISITES: Core Curriculum - Audio, Networking, PC

Participants should have a working grasp of Audio basics including signal flow, gain structure, basic acoustics and terminology. We encourage you to "bring your venue" with you. All dimensions, photos and design requirements are welcomed for discussion during the JBL Software Ecosystem module.

CLASS TYPE: Instructor Led
DURATION: 2 days
DESCRIPTION:

In this two day intensive, you will learn how to implement A12, A8 and other VTX systems with great success. We touch on everything from the JBL software ecosystem, networking, iTech amplifiers, rigging, verification and optimization.

Learning Objectives: Participants will walk away with a deeper understanding of transducer technology and the acoustic principles that make line arrays work. We will have a deep dive into the VTX products, from the signal processing and amplifier technology behind them through to the proper physical implementation. The JBL Software ecosystem will be thoroughly explained and participants will get hands on time with array design, rigging, configuration, and verification.

Certification: At the completion of the workshop, participants will receive a digital certificate of attendance.

TOPICS COVERED:
- Line Array Calculator software (LAC)
- JBL Performance Manager software
- Transducer technology
- Acoustic principals
- Signal processing
- Amplifier technology
- Array design
- Rigging
- Configuration & Verification

REQUIRED MATERIALS:
- Participants should bring their own PC or a Mac with Boot Camp, preloaded with the latest versions of LAC (Line Array Calculator) and Performance Manager. These programs should be up and running prior to the session.

EXAM / PRACTICAL: N/A
CREDITS EARNED: N/A
CERTIFICATE EARNED: AT232: JBL VTX 2-Day Workshop
College of Martin Lighting Courses

LT232: Martin | Lighting Technician (Instructor Led)

College of Martin Lighting Certifications

HCLA — (Architectural) Design

LD131 Design Essentials | Introduction to Lighting (Architectural) Design (Online)
# Martin | Lighting Technician

**LIGHTING ARCHITECTURAL DESIGN FOR AV PROFESSIONALS**

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Martin</th>
<th>Lighting Technician</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NUMBER</td>
<td>LT232</td>
<td></td>
</tr>
<tr>
<td>FOUND IN CURRICULUM</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>SUGGESTED CORE</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>PREREQUISITES</td>
<td></td>
<td>Participants should have a general understanding of electricity, know how to use a multimeter, have good mechanical skills, an open mind and a willingness to learn.</td>
</tr>
<tr>
<td>CLASS TYPE</td>
<td>Instructor Led</td>
<td></td>
</tr>
<tr>
<td>DURATION</td>
<td>3 days</td>
<td></td>
</tr>
<tr>
<td>DESCRIPTION</td>
<td>In this three day intensive, you will learn how to properly troubleshoot and diagnose electrical and mechanical failures, maintain lighting fixtures to increase the operational lifespan and maximize return on investment, access and repair/replace faulty components, and utilize tools required to service lighting fixtures.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Certification: At the completion of the workshop, participants will receive a digital certificate of attendance.</td>
<td></td>
</tr>
<tr>
<td>TOPICS COVERED</td>
<td>Troubleshooting and diagnosing electrical and mechanical failures. Maintaining lighting fixtures. Repairing and replacing faulty components. Utilizing tools required to service lighting fixtures.</td>
<td></td>
</tr>
<tr>
<td>REQUIRED MATERIALS</td>
<td>Digital Multimeter, precision screwdriver with Hex and Allen bits, diagonal side cutter, long nose pliers.</td>
<td></td>
</tr>
<tr>
<td>EXAM / PRACTICAL</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>CREDITS EARNED</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE EARNED</td>
<td>MAC Attack Training for Service &amp; Repair</td>
<td></td>
</tr>
</tbody>
</table>
# Introduction to Lighting (Architectural) Design

**Design Essentials | Introduction to Lighting (Architectural) Design**

**COURSE TITLE:**
Design Essentials | Introduction to Lighting (Architectural) Design

**COURSE NUMBER:**
LD131

**FOUND IN CURRICULUM:**
STEP 1: Lighting Associate | Architectural Design Certification

**SUGGESTED CORE:**
N/A

**PREREQUISITES:**
None

**CLASS TYPE:**
On-Demand (online only)

**DURATION:**
1.5 hours (approximate video run time)

**DESCRIPTION:**
This online course was built to help those seeking to better understand the Martin lighting product line of architectural and creative LED products. We discuss topics ranging from the fundamentals of lighting to what Martin products are available and where to use them to gain the maximum creative impact for your project. Students who complete the course should leave with improved confidence in specifying Martin products into projects as well as having a better overall understanding of the Martin architectural and creative product lines. Explore the possibilities of what can be achieved by utilizing the Martin lighting architectural product portfolio.

**TOPICS COVERED:**
- Fundamentals of lighting
- Specifying Martin products in projects
- Understanding Martin architectural product lines
- Understanding Martin creative LED product lines
- Controlling Martin products
- Powering Martin products

**REQUIRED MATERIALS:**
Computer with internet access

**EXAM / PRACTICAL:**
LD160 Harman Certified Lighting Associate | Architectural Design - Online Exam

**CREDITS Earned:**
InfoComm RUs—0.75

**CERTIFICATE Earned:**
Harman Certified Lighting Associate | Architectural Design (HCLAD)

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### Course Map to Lighting Designer Certification

**ASSOCIATE**

**LD131**
On Demand

**LD160**
Online Exam

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For more information, visit training.harmanpro.com
College of Studer Courses
Studer Audio Design

DESIGN ESSENTIALS

COURSE TITLE
Studer | Audio Design

COURSE NUMBER
SD131

FOUND IN CURRICULUM
STEP 1: Studer | Audio Design Certification

SUGGESTED CORE
N/A

PREREQUISITES
None

CLASS TYPE
On-Demand (online only)

DURATION
1.5 hours (approximate video run time)

DESCRIPTION
This online course consists of several individual videos that focus on various Studer Vista and Glacier mixers for a variety of solutions. The course focus is to know the individual Studer products, their capabilities, which Studer products to recommend, and where they are used. It will give you a basic understanding of the accessories for each of the Studer products and their usefulness, and help you understand industry language and specific tools. Students who complete this course should have a better understanding of the Studer mixer product line and how to design appropriate mixer solutions.

TOPICS COVERED
- Cores
- Compact Stage Box
- D21M I/O System
- D32M I/O System
- I/O Cards
- Control Cards
- Breakout Panels

REQUIRED MATERIALS
Computer with internet access

EXAM / PRACTICAL
SD160 Harman Certified Studer Associate | Audio Design-Online Exam

CREDITS EARNED
InfoComm RUs—0

CERTIFICATE EARNED
Harman Certified Studer Associate | Audio Design

Course Map to Studer Audio Designer Certification