KRAMER
ACADEMY
BROCHURE

LEARN 2 EARN™ with Kramer Academy - Because AV KNOWLEDGE = SUCCESS™

INDUSTRY-LEADING EDUCATIONAL OPPORTUNITIES FROM KRAMER ELECTRONICS

VOLUME 1

KRAMER ACADEMY

Kramer Electronics offers an extensive curriculum of AV Technology, Sales and Relationship Marketing classes to enhance your AV knowledge that leads to professional success. Most Kramer courses offer learning credits toward many industry certifications, such as InfoComm CTS Renewal Units (RUs), American Institute of Architects (AIA) Continuing Education System Learning Units (LUs), NSCA EST Learning Units (LUs) and NSCA Certificate of Completion Learning Units (CCLUs). With classes in the Kramer Academy, you not only **Learn**, you also **Earn**. Kramer Academy helps you enhance your value within the industry.

THE WEBSITE FOR PREMIER AV TRAINING

Kramer is continually developing new courseware, resource material and online/VTC training solutions. Check our website for a list of the most recent courses and resources at www.krameracademy.com. You can also contact your local Kramer office today to discuss and schedule your Kramer AV Academy training with our training professionals.

OUR MISSION

To provide relevant and topical training and education on key industry concepts, technologies and techniques that provide students with the comprehensive knowledge base necessary to succeed in the AV marketplace.

We Are Dedicated to Education

Kramer Electronics is proud to have a comprehensive lineup of educational seminars, training programs and literature on a wide variety of important topics for AV industry professionals. Our classes cover the technical nuts and bolts concepts that are the foundation of the industry and we also offer courses designed to enhance personal skills, particularly in sales. We invite you to take advantage of our full offering since knowledge is one of the most valuable tools we can provide to our customers.

CERTIFICATION/CONTINUING EDUCATION SUPPORT

The Kramer Academy offers courses that carry InfoComm CTS renewal units, AIA Continuing Education System learning units and both NSCA EST learning units and NSCA Certificate of Completion learning units. With Kramer Academy courses, you can Learn 2 Earn™.

LICENSED MATERIAL

The Kramer Academy offers four licensed classes. The *CTS Exam Prep* class, the *Essentials of AV* class and the *AV/IT Integration for Technical Professionals* class are three-day InfoComm courses. The fourth is the full day *Digital Signage Certification Program* from the Digital Signage Experts Group.

The *CTS Exam Prep* class helps to prepare students to take the CTS exam or to earn 24 of the 30 CTS RUs necessary for CTS renewal. The *Essentials of AV* class covers the science of the industry. The *AV/IT Integration* class is designed for AV and IT professionals who are responsible for communicating why, where and how AV and IT technologies intersect. Since Kramer is an InfoComm Diamond Level Audio Visual Solutions Provider, we understand the value in supporting such programs and how difficult it is to achieve and maintain your people's certification. Kramer helps to make the process easier.

The *Digital Signage Experts Group Program* provides an in-depth review of digital signage fundamentals. From there you can expand your knowledge to encompass a broader spectrum of solutions.

EXPERT PARTNERS

Many of the classes in the Kramer Academy have been developed in conjunction with leading industry personalities and key industry associations that are the foundation of the pro AV and broadcast markets. We have sought out and tapped the most knowledgeable "Expert Partners" we could find. The following information introduces them.

► Pete Putman, CTS – **2008 InfoComm Educator of the Year**. Pete is well known in the industry. He owns and edits the HDTVExpert web site at www.hdtvexpert.com, is the president of ROAM Consulting LLC and is also a contributing editor to Pro AV magazine. As his award indicates, Pete is a renowned industry educator who has been writing about and teaching professional AV topics and technology for over 20 years.

► Alan Brawn, CTS – Alan is the owner of Brawn Consulting, the head of the Imaging Sciences Foundation Commercial Group (ISF-C) and a founding member of the Digital Signage Experts Group. Alan has also been long recognized in the Pro AV industry as a trainer and educator. His work with the development of the ISF-C class for the professional market and the Digital Signage Experts Group has furthered knowledge of the industry.

► InfoComm International – Kramer licenses content from InfoComm, which administers the only industry certification program that is ANSI accredited to the ISO/IEC 17024 personnel standard. Kramer also volunteers instructors and content developers to InfoComm and is an approved CTS Renewal Unit provider.

FLEXIBLE SCHEDULING AND LOCATION OPTIONS

Kramer is committed to offering the most comprehensive educational opportunities to the industry. We don't only provide education at our facilities, we can come to your location for on-site training. We also run regional classes that are convenient to attend. Wherever there is anaudience, we stand ready to examine the possibility of coming and providing training services.

ONLINE TRAINING

In addition to traditional on-the-spot classroom training, the Kramer Academy also offers web based trainings. Whether it is just not possible to get everyone together, or if online training is an important part of your educational programs, Kramer can provide you the online web-based training you need. Any of our long-form programs can be condensed into a webinar or series of webinars.

EVERY KRAMER SALESPERSON CAN HELP YOU – LEARN 2 EARN™

In our effort to offer the most comprehensive education and training programs at the highest level of quality, we have made a significant investment in all our technical and sales personnel. All of Kramer Electronics field sales and sales support personnel have been trained in our "Pillars and Keystones" program that teaches our representatives to be highly effective presenters. Whoever successfully completes this program is authorized to teach classes that offer InfoComm CTS renewal units, AIA CES learning units and both NSCA EST and NSCA Certificate of Completion learning units. Every manufacturer seeks the valuable time of its customers to present its products. Kramer differentiates itself by additionally offering educational material that carries tangible InfoComm CTS renewal units. Every visit can bring real value to your office as your people Learn 2 Earn with Kramer. All our offerings can be condensed into Lunch & Learn sessions. Any 2 hour or 3 hour seminar can be condensed to a shorter presentation or a shorter series of presentations. Just ask any Kramer representative.

GUEST AND KEYNOTE SPEAKING/TRAINING PROGRAMS AVAILABLE

Max Kopsho is the main instructor for Kramer Academy US. Max is a highly recognized industry training veteran. As an InfoComm Academy Senior Instructor, Max has made presentations at many InfoComm shows and is one of their key resources. Along with Max, Kramer Electronic's Vice Presidents of Product Development and Support and Vice President of Marketing, Chris Kopin and Clint Hoffman, are also available for guest or keynote speaking engagements as well as custom training programs. Kramer Electronics believes in education to further the industry and we make our key personnel available to our customers whenever we can. If you can imagine it and you can provide the audience, we would like to make it happen.

VALUABLE RESOURCE MATERIALS - KRAMER LIBRARY AND KRAMER GUIDE TO VIDEO AND AUDIO PRESENTATIONS

In addition to class offerings, the Kramer Academy has two reference books on important industry topics. "The Kramer Library" is a series of industry technology white papers bound into one convenient book. "The Kramer Guide to Audio and Video Presentations" is both an AV dictionary and a resource for technical discussions on common AV problems with a Pro AV FAQ section as well. Kramer Academy also provides a vast resource online. Our online library includes an FAQ section on AV and a comprehensive AV glossary. InfoComm CTS units are also available for reading and testing on the different sections of the Kramer Library.

TABLE OF CLASS OFFERINGS AND CONTINUING CREDITS

COURSE	COURSE	CTS	CTS-I	CTS-D	AIA	EST	CCP
CTS EXAM PREP	CTS	24	24	24			
ESSENTIALS OF THE AV INDUSTRY	Essentials	25	25	25			
AV/IT INTEGRATION FOR TECHNICAL PROFESSIONALS	AV/IT	24	24	24			
DIGITAL SIGNAGE EXPERTS GROUP CERTIFICATION	DSCE	4	4	4			
A/V IN THE DIGITAL AGE	1	2	2	2	2	2	1.5
GETTING THE MOST FROM A DISPLAY	2	2	2	2	2	2	1.5
INTRODUCTION TO ANALOG AND DIGITAL AUDIO	3	2	2	2	2	2	1.5
INTRODUCTION TO ANALOG VIDEO	4	2	2	2	2		
INTRODUCTION TO DIGITAL TELEVISION	5	2	2	2	2		
UNDERSTANDING RGB DISPLAYS	6	2	2	2	2		
CABLES, AC AND RF SIGNALS	7	3	3	3	3	3	2.25
UNDERSTANDING CONTROL SYSTEMS AND PROTOCOLS	8	2	2	2	2	2	1.5
UNDERSTANDING DISPLAY TECHNOLOGY	9	2	2	2	2	2	1.5
VIDEO SIGNALS, FORMAT CONVERSION AND EDID & HDCP HANDLING	10	3	3	3	3	2	1.5
THE BASICS OF SOLUTION SELLING FOR AV INTEGRATORS	11	4			4		3
CHOOSING AND APPLYING THE BEST DISPLAY TYPE	12	3	3	3	3		2.25
KNOWING YOUR CIRCLE OF INFLUENCE	13	3	3	3	3		2.25
CURRENT AND EMERGING TECHNOLOGIES FOR CLASSROOM ENVIRONMENTS	14	3	3	3	3	3	2.25
NO COMPROMISE - SALES AND SERVICE IN PRO AV	15	3	3	3	3		2.25
IT SPEAK FOR THE AV PRO	16	3		3	3		2.25
SIMPLIFIED CONTROL SYSTEM FOR STANDARD FIXED INSTALLS	17	3	3	3	3	3	2.25
IMPACT OF DIGITAL SIGNALS ON SYSTEM INTEGRATION	18	3	3	3	3	3	2.25
BASICS OF SCALER TECHNOLOGY	19	1.5	1.5	1.5	1.5	1.5	1.13
BASICS OF SCALER TECHNOLOGY WHITE PAPER	20	1	1	1	1		
SUMMITVIEW™ SYSTEM DEMONSTRATION AND EASE OF USE	21	1	1	1	1		
MATCH ME IF YOU CAN	22	3	3	3	3		
PLUG AND PRAY	23	4	4	4	4		

Full descriptions can be found on subsequent pages.

CTS, CTS-I and CTS-D are InfoComm Certifications and stand for Certified Technology Specialist, Certified Technology Specialist Installation and Certified Technology Specialist Design. Credits earned for InfoComm certification renewal are called RUs or renewal units. AIA is the American Institute of Architects. Credits earned for AIA are part of the CES or Continuing Education System and are called LUs or Learning Units. EST and CCP are NSCA University certifications and stand for Electronic Systems Technician and Certificate of Completion Program. Points toward NSCA certification are also called LUs or Learning Units.

REMEMBER - If you like a class, we can customize it for your needs. We can condense any class (other than those classes we have licensed) into a Lunch & Learn or Webinar one time event with just the most pertinent information taken from the large form of the program. We can also turn any class into a Lunch & Learn or Webinar series where all the information from the large form program is covered over time. We can also create custom programs from scratch based on the training needs of your organization. Please, just ask.

CUSTOMIZED TRAINING AND KEYNOTE SESSIONS ARE AVAILABLE

Kramer Electronics believes in education to further the industry and we make our key personnel available to our customers whenever we can. If you can imagine it and you can provide the audience, we can make it happen. Below are just a few examples and we encourage you to contact us to help you design your next event or sales meeting.

EXAMPLES OF POSSIBLE CUSTOM TRAINING AT DEALER EVENTS

EXAMPLE 1 - CHOOSING AND APPLYING THE BEST DISPLAY TYPE FOR YOUR AV DESIGN

There are many factors that determine when certain display technologies are used and how they are applied. We provide an easy-to-use needs analysis tool to help determine whether to use front projection, rear projection, or direct view display technology in your plans. We compare and contrast many display technologies, including LCDs and plasmas, to see how they best apply to your design. In addition, we discuss the importance of proper set-up and calibration of your displays to learn the incredible difference this can make. By using the proper display technology, your client's ROI increases and the total cost of ownership is reduced.

–AIA credited lesson provided by Kramer Electronics and sponsored by (your company name here)"

EXAMPLE 2 - MOVING FROM ANALOG TO DIGITAL AUDIO & VIDEO SIGNAL PROCESSING

Max Kopsho, Director of Training and Educational Programs from Kramer Electronics US, discusses the intricacies in moving from an analog to a digital world and how we move those signals along various transport mediums such as fiber, UTP and multi-core.

EXAMPLE 3 - YOUR CIRCLE OF INFLUENCE - THE SEVEN STEPS TO OPTIMAL INFLUENCE

This class, for sales and customer service people, teaches how to improve interpersonal skills to manage those around them and their daily interactions with customers. In the classic style of a "7-Step" program, this training demonstrates the strength and power that comes with personal influence. Any significant change an organization must make stems from motivators within the core of the organization. This applies to changes in small policies of dress code as well as significant customer service re-engineering. This class covers basics, individual responsibilities, a team values exercise, a personal development planning exercise, a strengths exploration, and ideas on where to improve and where to find help.

CURRENT AND EMERGING TECHNOLOGIES FOR CLASSROOM ENVIRONMENTS

Keynote Speaker: Max Kopsho, Director of Training and Consultant Relations for Kramer Electronics US

Learn about integrated AV/IT solutions and their overall system capabilities. This keynote session covers hot topics, buzzwords, terminology and specifications for AV and IT. We discuss current technology trends and emerging technologies. This class explains fundamentals of IT specifications and how to translate them to the overall audiovisual system requirements. Participants discuss current options available in the market and present AV technologies for the education market are briefly outlined.

REMEMBER - If you like a class, we can customize it for your needs. We can condense any class (other than those classes we have licensed) into a Lunch & Learn or Webinar one time event with just the most pertinent information taken from the large form of the program. We can also turn any class into a Lunch & Learn or Webinar series where all the information from the large form program is covered over time. We can also create custom programs from scratch based on the training needs of your organization. Please, just ask.

THE PRIMARY KRAMER ACADEMY U.S. INSTRUCTORS

Kramer's highly experienced training staff regularly consults with other industry experts to stay up-to-date and completely objective in the development of this advanced curriculum. These industry experts are also contracted to present their content along with our industry recognized staff.

MAX KOPSHO

CTS, MCSE, DSCE, DIRECTOR OF TRAINING AND EDUCATIONAL PROGRAMS

Max Kopsho, CTS, MCSE, is currently the Director of Training and Educational Programs for Kramer US. Max (InfoComm's 2010 Educator of the Year) is responsible for internal and external (Kramer Partner and Industry Event) sales and technical training. For over 13 years Max has worked in the AV industry managing sales, product management, channel marketing, field technical services and training. Over the last 21 years Max has acquired an extensive background in supporting AV systems, computer networks, telecom, and VTC systems. For nearly 10 of those years he served in the Army as an electronics/electro-optics technician/ engineer. Max worked with special electronics devices such as thermal imaging, night vision and as a repairman for the Hawk missile system. He currently serves on the InfoComm Professional Educational and Training Committee as Chairperson for the Curriculumn Development Sub-Committee and as a member of the InfoComm Selection Committee. Max is Senior Faculty for InfoComm Academy. He is the only person outside the DSEG authorized to teach and conduct certification program testing for the Digital Signage Certified Expert (DSCE) program. He is a member of the US Green Building Council - Atlanta Chapter. Max has been an instructor for NSCA University, NAB and a keynote speaker at the M2M conference.

CLINT HOFFMAN

CTS, VP OF MARKETING

Clint Hoffman, CTS is currently Vice President of Marketing for Kramer Electronics. He has been in the Pro AV industry for 24 years. He began his career at the at a Pro AV dealership and has spent the last 24 plus years working in various sales, product development and marketing positions in the AV industry. He is a member of the International Communications Industries Foundation Board and is also an Adjunct Faculty member of InfoComm International. Clint currently serves on the InfoComm Professional Educational and Training Committee and is a member of the InfoComm Exhibitors Committee. In 2009/2010 he served as the Chairman of the NAB Exhibitors Advisory Committee.

AHARON YABLON, CTS

Aharon was the first Kramer Electronics Israel employee to pass the CTS exam.

Aharon speaks fluent English, Spanish and Hebrew and he speaks Portuguese very well. Aharon has participated in more than 80 commercial exhibitions worldwide, including all InfoComm exhibitions since 1981. Aharon has been serving as the first Kramer Latin American Director over the last eight years, delivering a large number of AV educational programs in more than 15 different countries. Aharon has more than 25 years of experience in international business, though he has focused primarily on the Latin America market. He has lived and worked for nine years in four Latin countries: Ecuador, Mexico, Guatemala and Colombia. He has assisted in the design of AV & TV systems in the following countries: México, Guatemala, Belice, El Salvador, Honduras, Nicaragua, Costa Rica, Panamá, Venezuela, Colombia, Ecuador, Perú, Bolivia, Brazil, Uruguay, Argentina, Chile, Paraguay, Dominican Republic and Jamaica. He has extensive knowledge and commerical experience in different high tech fields, including: electro-optics, video systems, television broadcasting, multimedia systems, medical systems, telecommunications, military systems and more. He has more than 10 years of previous engineering experience, mainly in systems design and project management.

Aharon Received his B.Sc.E.E. (Electronic Engineering) in 1974 and his M.Sc.E.E. (Electronic Engineering – Simulation & Modeling) in 1980, both from Tel-Aviv University. Among more than 40 different training programs in various disciplines that Aharon has completed, he has successfully completed the following courses:

1. 2000 - Establishment and Management of High Tech Companies at Mesila MTI Hi-tech Institute, Israel.

2. 1988 - Business Administration (International Marketing), Tel-Aviv University, Israel (MBA-level intensive course).

3. 1983 - Spanish, Universidad Catolica, Quito, Ecuador (Two-year intensive course).

4. 1977 - Electro Airborne Optical Systems, US Air Force, USA (6 month courses).

DAVID PENROSE, CTS

David Penrose studied Electronic Engineering at Newcastle Technical College in 1983. He started in the cinema industry as a cinema technician with Greater Union Village Technology. This entailed learning about the audio, optical, mechanical, electrical and acoustic systems in cinema. After five years he became a project manager in charge of the installation of new cinema complexes both in Australia as well as in Asia. In 1994 he became the Technical Manager for a Thai-Singapore joint venture, cinema installation company Greater Union Village Technology Thailand. During this time he designed, coordinated, installed and commissioned cinemas in Thailand, Singapore, Hong Kong, Malaysia and Dubai.

When the cinema industry in Thailand suffered a severe downturn in 1999 and all of the staff were incorporated into the Thai partners parent AV company, David became the Technical Manger in Thailand in 2000 for the AV company Vichai Trading. As the only English speaking technical person in the company he took on the role of Product Manager. With all of the suppliers based outside Thailand, David was also responsible for training. He attended technology training so that he could train the Thai-speaking staff within Vichai. While in Thailand he passed both Certified Technology Specialist (CTS) and Certified Technology Specialist Design (CTS-D). David gained a lot of training experience while setting up a training course for the technical staff that was similar to CTS.

David joined Kramer Electronics in 2008 as a System Specialist. He is working to raise the awareness of Kramer products within the consultant community in Asia. In addition, David trains the local branch staff, and conducts training at the local level to system integrators, dealers and end users.

JEAN-PIERRE LACAN, CTS

Jean-Pierre Lacan received his TUD (Technology University Diploma) in physics from Saint Denis University, France. He spent 20 years in Tektronix in different positions, including service engineer in professional broadcast test equipments, customer training in the European support center and finally team leader in the European service center located in France. During these years he developed his skills in all high tech electronics technologies, communication and leadership.

He joined Kramer Electronics France in 2004 and acts as support engineer in the Kramer France team. Since he joined he is heavily involved in training and education programs, bringing into play his vast technological knowledge and excellent teaching skills.

YUVAL INDITZKY, CTS

After studying Computer Engineering in the Technion Institution, Israel, Yuval joined his family-owned company where he supported and helped transition professional still photographers from the film era to the digital age. He mastered the areas of digital image quality, color processing, high-end optics, computer networks and similar topics. During his six years in this field he passed numerous technically oriented courses and trainings.

In 2007 he joined Kramer Electronics as manager of education and training. Since then he has created educational material covering the different AV technologies and lectured in many of Kramer's worldwide seminars and trainings.
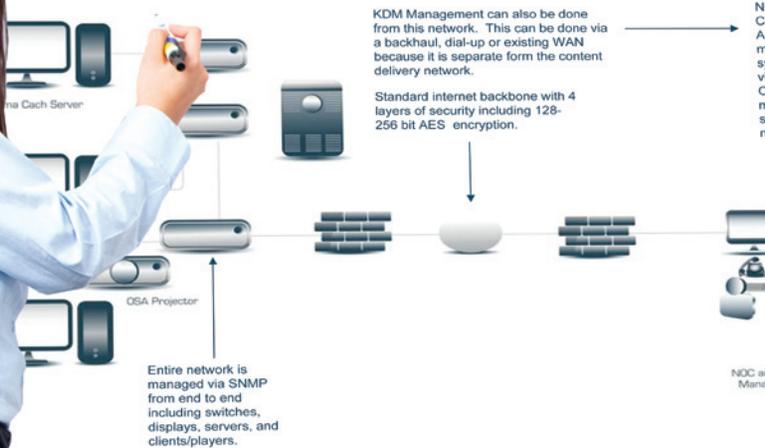
COURSE LISTINGS

INFOCOMM LICENSED CTS EXAM PREP COURSE– 3 DAY COURSE – COURSE CODE: CTS

Kramer Academy has licensed the content from InfoComm's acclaimed *CTS Exam Prep* class. This class provides a forum for people to explore the new exam format and to work collaboratively, guided by a facilitator, studying the topics provided in the exam content outline. This course is ideal for the learner who likes a hands-on, interactive learning environment.

GENERAL CTS EXAM PREP

► InfoComm Licensed Content

► Facilitated by Experts

► Collaborative - Small Groups

► Greater than 90% Exam Pass Rate (in 2009 and the 1st half of 2010 – exam pass rate is facilitated by this training, but dependent ultimately on the student)

Kramer offers the most effective learning environment and lowest cost solution available for preparing to obtain the InfoComm CTS designation. In this three-day course students participate in a facilitator-guided forum working in small groups during which they explore the new CTS exam format and review the InfoComm licensed content that serves to prepare participants for the exam. This class is also worth 24 CTS renewal units and is an excellent way for anyone currently holding the CTS designation to get the bulk of the renewal units necessary to keep their certification.

Let Kramer help you become CTS certified and enhance your value within the industry and to your clients. Don't miss this incredible opportunity.

CTS EXAM PREP CLASS INCLUDES:

► Overview of the testing process, using the CTS Candidate Handbook

► Limited lectures on various main topics – including known trouble areas

► Hands-on practice with designated tasks

► Self assessments with guided results review

► Opportunities for you to study areas where you know you need help

► Collaborative study in workgroups with your peers

Kramer offers the CTS Exam Prep Class both regionally and at strategic partner locations nationwide.

Students also receive the following InfoComm publications: "Audiovisual Best Practices: The Design and Integration Process for the AV and Construction Industry" and "AV Setup Guide for Events, Meetings, Conferences, and Classrooms"

IMPORTANT NOTES

There is a per attendee charge for the course. Contact your Kramer representative to discuss pricing and the possible use of Kramer marketing development funds to cover that cost. Travel, food, lodging or cost of the test are not included. CTS test scheduling and associated costs must be arranged directly with InfoComm and are not included in costs of the course. Attendance in this course in no way guarantees that you will pass the exam, nor does this program cover all the topics listed in the test outline.

PREREQUISITES

To register for this class you must have a solid command of the rudimentary technical essentials of the AV industry, as presented in InfoComm's Essentials of the AV Industry curriculum in the online, textbook or classroom forms of the course (classroom course outside the U.S. and Canada). If you have any doubts about your preparedness for this class, please visit the CTS exam resources pages of the InfoComm Web site or contact Max Kopsho at 678-314-5258.

INFOCOMM LICENSED ESSENTIALS OF THE AV INDUSTRY – 3 DAY COURSE – COURSE CODE: ESSENTIALS
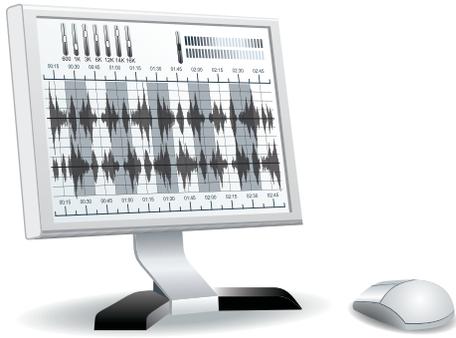
GET BACK TO BASICS WITH THE ESSENTIAL AV RESOURCE

Kramer Electronics offers InfoComm's most popular class as a three-day in-person experience.

Essentials of the AV Industry contains the essential audio, video and systems technology on which AV solutions are based.

When InfoComm, formerly ICIA, debuted the *Essentials of the AV Industry* online course in 1997, the members and staff never dreamed of its impact on the industry. Since that time, InfoComm has had more than 22,000 enrollments in this online course along with its companion course, AV from A-Z for Sales Professionals. On any given day, more than 1,500 people are enrolled in the *Essentials of the AV Industry* course or have access to its content. It is used as a training tool around the world, since its translation into Spanish and German.

Over the years, *Essentials of the AV Industry* has had three major revisions. It is now updated quarterly to keep current with constant changes in the AV industry through the volunteer efforts of some of the best experts in the industry. The original form of delivery of online training anywhere, anytime, was advanced for its time, and the AV industry has embraced learning on the Internet wholeheartedly. Recently InfoComm responded to the requests from those students preferring classroom training by creating a three-day course offered around the world.

Kramer offers the *Essentials of the AV Industry* class at strategic partner locations nationwide. Students also receive a copy of InfoComm's "Essentials of the AV Industry" publication as well as online access to the course material.

IMPORTANT NOTES

There is a per attendee charge for the course. Contact your Kramer representative to discuss pricing and the possible use of Kramer marketing development funds to cover that cost. Travel, food, lodging or cost of the test are not included.

INFOCOMM LICENSED AV/IT INTEGRATION FOR TECHNICAL PROFESSIONALS – 3 DAY COURSE – COURSE CODE: AV/IT

KRAMER ACADEMY HAS LICENSED THE CONTENT FROM INFOCOMM'S – AV/IT INTEGRATION FOR TECHNICAL PROFESSIONALS

This comprehensive three-day course teaches some of the challenges of creating, implementing and communicating the big picture of an integrated system. Instruction is presented through technical demonstrations and exercises to reinforce key concepts. Students are encouraged to share their experiences with the class. The course covers a typical project sequence, including:

▶ Assessment of the hardware and software requirements for a system.

▶ Configuration of a typical network infrastructure according to standardized structured cabling techniques.

▶ Qualification of cabling with test equipment.

▶ Building a simple network and certifying it on the infrastructure.

▶ Deployment of representative audiovisual equipment on the network.

▶ Configuration of devices to an operational state.

▶ Exploration of several IP-based applications such as control systems.

▶ IP-enabled devices (projectors, appliances, switches and network routers), video streaming, digital signage, audio- and videoconferencing, and CobraNet®.

AUDIENCE

This class is designed for integrators, design consultants, AV and IT managers - audiovisual and information technology professionals who are responsible for communicating why, where and how these technologies intersect.

IMPORTANT NOTES

There is a per attendee charge for the course. Contact your Kramer representative to discuss pricing and the possible use of Kramer marketing development funds to cover that cost. Travel, food and lodging are not included.

PREREQUISITE

There are no prerequisites for the *AV/IT Integration for Technology Professionals* course. However, we strongly recommend that students with an IT background complete *Essentials of the AV Industry* unless they already hold a general Certified Technology Specialist (CTS®) designation. Students with an AV background are urged to complete the *Audio-Video* and *Control System Networking* class online as excellent preparation for the class. Contact your Kramer representative or InfoComm to discuss how to register for the recommended online courses.

THE DIGITAL SIGNAGE CERTIFIED EXPERT PROGRAM – 1 DAY COURSE – COURSE CODE: DSE

The *Digital Signage Certified Expert Program* (DSCE) is a one day digital signage certification course using an on-site or webinar approach. The newly established Digital Signage Experts Group is an impartial and non-brand oriented standards body offering the DSCE certification to the industry as a whole. The DSEG is advised by a council of digital signage industry experts and consultants. The course provides an overview of digital signage along with the following individual segments that make up the industry:

▶ An overview of the digital signage marketplace reflected in research and data.

▶ Understanding digital signage customers and applications.

▶ The needs analysis (who, what, when, and where).

▶ The fundamentals of effective digital signage system design.

▶ The location and environments of digital signage.

▶ Digital signage hardware.

    1. Displays

    2. Mounts

    3. Cables and connectors

    4. Signal distribution

    5. Players

▶ Network tutorial.

    1. Wired

    2. Wireless

    3. Cellular

    4. Satellite

    5. RF/Broadcast (Datacasting)

▶ Digital signage software.

    1. Player/client software

    2. Server software

    3. Management, distribution and scheduling software

    4. Content management

▶ Content.

    1. Analysis

    2. Availability

    3. Sources

    4. Creation

    5. Partnering

▶ Digital signage ROI/TCO/ROO.

    1. "Selling Value in Digital Signage"

▶ Fees and service models.

▶ Understanding and selling value, not just hardware.

▶ Manufacturing and product resources.

▶ Tradeshows and publications.

IMPORTANT NOTES

There is a per attendee charge for the course. Contact your Kramer representative to discuss pricing and the possible use of Kramer marketing development funds to cover that cost. Travel, food and lodging or cost of the test is not included. There is a certification test at the completion of the course and certificates issued to those who pass. For more information, please contact your Kramer representative.

KRAMER ACADEMY FOUNDATIONS OF THE INDUSTRY™ SERIES - COURSES 1 THROUGH 10

COURSE #1:

AV IN THE DIGITAL AGE: (2 Hours) - This course is a detailed examination of the transition from an analog AV world to a digital AV world.

The course covers the following topics:

▶ The ongoing transition from analog audio, video, and control systems to digital systems, with recent product announcements and issues/ standards/practices, including:

▶ Common formats used to compress digital content (MPEG, JPEG, MP3, WMA).

▶ Broadband service, Web downloads and portability of A/V content.

▶ The growing use of TCP-IP protocol with AV devices in LANs and WANs.

▶ Trends in display technologies (higher resolution, smart interfaces, green operation).

▶ Adoption of multi-channel audio and high-definition for "virtual presence" and 3D.

▶ Emerging optical disc formats (HD DVD, Blu-ray, holographic storage).

▶ Solid-state memory and hard disk drive (HDD) recording and playback.

▶ Copy protection issues (HDCP, AACS, DeCSS, Broadcast Flag).

▶ Digital signal interfaces (DVI, HDMI 1.3, DisplayPort 1.1) and benchmarks.

▶ Transmission systems (fiber optics, high-speed networks, WiMedia UWB wireless).

COURSE #2:

GETTING THE MOST FROM A DISPLAY: (2 Hours) - This course explains the correct procedure for setting up and calibrating electronic displays.

The course covers the following topics:

▶ Using NTSC and PAL test patterns.

▶ Setting brightness and grayscale.

▶ Measuring contrast.

▶ Setting video color saturation and hue (phase).

▶ Setting white balance and color temperature.

▶ Using projection lenses.

▶ Viewing environments for front projectors and direct-view monitors.

▶ Controlling room lighting.

▶ Choosing screen sizes and optimizing viewing angles.

COURSE #3:

INTRODUCTION TO ANALOG AND DIGITAL AUDIO: (2 Hours) - This course explains analog and digital audio theory and terminology.

The course covers the following topics:

▶ Frequency, wavelength, and phase of audio signals.

▶ Balanced and unbalanced wiring.

▶ High impedance, low impedance, and transformer use.

▶ Audio connector types, balanced and unbalanced.

▶ Microphone types (unidirectional, omnidirectional, cardioid).

▶ Audio processors and amplifiers.

▶ Speaker types (sizes, patterns, frequency response).

▶ Sampling of audio signals and bit depth (quantizing).

▶ D/A and A/D converters.

▶ Professional digital bit rates for audio.

▶ Multi-channel digital audio formats and terminology.

▶ Digital audio transport stream standards (AES-EBU).

COURSE #4:

INTRODUCTION TO ANALOG VIDEO: (2 Hours) - This course covers analog video and television theory and terminology.

The course covers the following topics:

▶ History of analog television and raster-scanning systems.

▶ NTSC video system and its characteristics.

▶ PAL video system and its characteristics.

▶ SECAM video system and its characteristics.

▶ Color decoding process from a composite video signal.

▶ Composite and component video formats compared and contrasted.

▶ Recording and distribution of analog video content.

COURSE #5:

INTRODUCTION TO DIGITAL TELEVISION (2 Hours) - This course is an extensive lesson in digital video and digital television.

The course covers the following topics:

► Digital video basics, such as quantizing a grayscale and sampling rates.

► The differences between serial and parallel data formats.

► Video compression and encoding/decoding, including MPEG and wavelet structures.

► MPEG I/B/P frame structures and the Group of Pictures encoding concept.

► Commonly used MPEG profiles and quality levels, along with the important MPEG program and map tables.

► Multicasting for terrestrial, cable, and satellite broadcasting, along with issues of image quality vs. available bit rates.

► SDTV and HDTV picture formats and aspect ratios, along with the concepts of letterboxing and pillarboxing.

► The transmission of digital TV signals, with emphasis on the ATSC system.

► Analog and digital video display formats, including DVI and HDMI, plus recording and playback of DTV signals.

► Overview of the HD-DVD versus Blu-Ray DVD format battle that is taking place in the current market.

COURSE #6:

UNDERSTANDING RGB DISPLAYS: (2 Hours) - This course provides the basics of RGB imaging systems and color space definitions.

The course covers the following topics:

► Compare and contrast raster-based and pixel-based imaging.

► Define common RGB display resolutions in fixed-pixel displays.

► Compare and contrast video and RGB color values and weights.

► Definitions of color palettes.

► Compare and contrast progressive-scan and interlaced scan display systems.

► Explain RGB picture synchronization formats.

► Discuss analog and digital RGB connectors and interfaces.

COURSE #7:

CABLES, AC, AND RF SIGNALS: (3 Hours) - This course covers the use of cables and the types of AC signals that flow through them.

The course covers the following topics:

► Definition of AC signal types and relationship to their frequencies.

► Differences between balanced and unbalanced wiring.

► Explanation of different coaxial cable types and their impedances and how impedance is determined.

► Identify the most common cable types used in the AV marketplace.

► Discuss the different types of coaxial cable connectors.

► Discuss the different types of digital signal interface connectors.

► Explain the relationship between wavelength and frequency.

► Define impedance, resonance, and relationship to frequency.

► Identify different filter types (parallel, series, bandpass, band reject).

► Explain different antenna patterns (omni, dipole, directional).

COURSE #8:

UNDERSTANDING CONTROL SYSTEMS AND PROTOCOLS: (2 Hours) - This course discusses common AV industry control protocols and systems.

The course covers the following topics:

► Discusses the four most common signal interfaces, including switched/ gated control, differential voltage control, pulse-width modulation, and TCP/IP control.

► Defines and explains RS-232, RS-422, and RS-485 control protocols.

► Defines and explains TCP/IP terminology, including DHCP and IP addresses.

► Explains LAN configurations and SMTP protocol.

► Discusses dry contact, solid-state, wireless IR, and wireless RF device control.

► Discusses mechanical, tactile, and software control interfaces.

REMEMBER - If you like a class, we can customize it for your needs. We can condense any class (other than those classes we have licensed) into a Lunch & Learn or Webinar one time event with just the most pertinent information taken from the large form of the program. We can also turn any class into a Lunch & Learn or Webinar series where all the information from the large form program is covered over time. We can also create custom programs from scratch based on the training needs of your organization. Please, just ask.

COURSE #9:

UNDERSTANDING DISPLAY TECHNOLOGY: (2 Hours) - This course covers the mainstream electronic display technologies in use today, plus new technologies that show commercial promise.

The course covers the following topics:

▶ Cathode-ray tube (CRT) technology, raster scanning, and CRT performance benchmarks.

▶ Transmissive low-temperature and high-temperature liquid-crystal (LCD) displays, with a discussion on birefringence and polarization fundamentals, plus the three advanced LC molecule alignment systems in use and LCD performance benchmarks.

▶ Reflective micromirror imaging (Digital Light Processing or DLP), introducing the concepts of pulse-width modulation (PWM), bit-depths and sampling, sequential (scanning) color, and RGB color imaging. DLP imaging benchmarks are presented.

▶ Reflective LCD (Liquid Crystal on Silicon or LCoS) follows with explanations of LC alignment, optical engine diagrams, and performance.

▶ Plasma display panels (PDPs), with a description of the imaging process and illustrations of pixel and rib structures. Plasma benchmarks are presented along with alternative imaging technologies including plasma tubes.

▶ Emerging emissive display technologies, starting with the surface-conduction electron-emitting device (SED) and ending with organic light-emitting diodes (OLEDs).

▶ Examples of both are shown, along with theories and diagrams of operation.

▶ This course concludes with a discussion of display illuminants (lamps, phosphors) and a comparison of color spectral output from common illuminants.

COURSE #10:

VIDEO SIGNALS, FORMAT CONVERSION, and EDID & HDCP HANDLING (2 Hours) - This course discusses analog and digital signals, the process of converting from one format to another including scaling, and EDID and HDCP issues in today's AV systems.

The course covers the following topics:

▶ Composite, s-Video, and component analog video signals and how they differ from each other.

▶ The three types of analog computer video signals (RGsB, RGBS, and RGBHV).

▶ Digital video/computer interfaces such as DVI and HDMI.

▶ Conversion of composite and component video to RGB color spaces.

▶ Scan conversion (downconversion) of video signals.

▶ Upconversion (scaling) of video signals.

▶ Bandwidth and its importance.

▶ High speed digital signal transport formats such as SDI and HD-SDI and FireWire.

▶ The use of switchers, distribution amplifiers, and seamless switchers

▶ Video cable types and specifications.

▶ EDID & HDCP - Understanding and handling the new four letter words of AV systems and system design in the Pro AV world.

KRAMER ACADEMY TODAY IN PRO AV™ SERIES – COURSES 11 - 22

COURSE # 11

THE BASICS OF SOLUTION SELLING FOR AV INTEGRATORS (4 Hours) - This class is for new sales professionals. It is based on the combination of several leading sales techniques and personal development techniques. The class covers relationship building, needs analysis, listening for implied needs, and question asking techniques. The major focus of this class is how to ask more of the right questions.

Course content description:

Although this class is designed for new sales or marketing professionals or new people to AV, it is great for the seasoned professional who wants a refresher on some important techniques as well. The main subject of the class covers the difference in volume/commodity sales versus the complexity of solutions selling in high tech. This class uses a presentation, facilitation, role playing and small group activities to keep the participation level high. Based on the combination of several sales and personal improvement techniques, this class takes the best of proven studies and well known theories, personal successes, years of experience, and some plain old common sense and uses them to help categorize and document a repeatable process and technique.

Learning objectives of this programs:

1. Identify what you are doing successfully now so you can repeat it.
2. Combine some new techniques to improve your selling and relationship skills.
3. Is the sales process something you do TO your customers or something you do FOR your customers? Change this; learn to focus on relationship building.

This course covers:

► Changing our terminology
► Understanding the stages of the complex sale
► Features, advantages and benefits - benefit mapping
► Identifying out-of-control sales - sales force effectiveness
► Commitment – moving the sale forward – closing

COURSE #12

CHOOSING AND APPLYING THE BEST DISPLAY TYPE FOR YOUR AV (3 Hours) - This course compares and contrasts many display technologies, including LCDs and plasmas, to see how they are best applied in your design. In addition, we discuss the importance of proper set-up and calibration of your displays; you learn the incredible difference this can make and discover that by using the proper display technology, your client's ROI increases and the total cost of ownership is reduced.

Learning objectives of this program:

1. Simplify the needs analysis process.
2. Identify where direct view versus front or rear projection are best applied.
3. State the top similarities and differences in LCD, plasma, DLP™, LCOS and LED.
4. Assist customers in determining ROI and TCO for display types and understand the importance of display calibration.

This course covers:

► Viewing environment
► Distance – angles - screen size
► Front v. rear projection
► Lighting considerations
► Signal types
► Analog v. digital
► HDTV v. SDTV and the effect on the viewing environment
► Display types
► CRT, plasma, LCD, LCOS – DILA™, DMD – DLP™
► Effects of image perfection on ROI and TCO
► Contrast and grayscale
► Black level
► Color saturation and hue
► White balance and color temperature

COURSE #13

KNOWING YOUR CIRCLE OF INFLUENCE - THE SEVEN STEPS TO OPTIMAL INFLUENCE (3 Hours) - This class is for sales and customer service people looking to learn how to better use their interpersonal skills to manage those around them and their daily interactions with customers. In the classic style of a "7-step" program this training shows all the attendees the strength and power that comes with personal influence.

Course content description:

The focus is that with any significant change an organization must make – it comes from within the core of the organization. This holds true with small policies of dress code to significant customer service re-engineering. This class covers basics, individual responsibilities, a team-values exercise, a personal development planning exercise, a strengths exploration, and ideas on where to improve and where to find help.

Learning objectives of this program:

1. Identify the seven steps to improving influence.
2. Use exercises in teamwork and self evaluations in strengths to determine where influence is used.
3. Identify difference in personal and professional influence and how these can effect customer service and sales.

This course covers:

► Seven steps to optimal influence.
► The basics of job performance.
► Understanding: who and how you influence.
► Your circle of influence at work.
► With great power comes great responsibility.
► Teamwork continuum - know the team.
► Values exercise, summary.
► Who are we? - know yourself exercise.
► Focus on strengths - your sweet spot - how you influence.
► Improve where you can - becoming a person of influence.
► Know when you can't and find help - Q and A.

COURSE #14

CURRENT AND EMERGING TECHNOLOGIES FOR CLASSROOM ENVIRONMENTS (3 Hours) - Learn about integrated AV/IT solutions and their overall system capabilities. This keynote session will cover hot topics, buzzwords, terminology and specifications for AV and IT.

Course content description:

We discuss current technology trends and emerging technologies. This class includes fundamentals of what the IT specifications are and how to translate to the overall audiovisual system requirements. Participants discuss current options available in the market and a brief outline will be presented on what AV technologies are available today for the education market.

Learning objectives of this program:

1. Identify market and review tools for needs analysis and site survey for educational AV needs.
2. Identify 3 new technologies in academic AV.
3. Identify 3 trends in technology in academic AV.

This course covers:

► AV in the digital age.
  1. Why the transition to digital .
  2. User needs.
  3. Broadcaster switch.
► Digital signal interfaces.
  1. HDMI, DVI, SDI, others.
► Audio and video compression and transmission.
► AV /IT.
► Applications and case studies.

COURSE #15

NO COMPROMISE – SALES AND SERVICE IN PRO AV (3 Hours) - No Compromise – This term was used for this course for two reasons. The first reason is the "Win-Win" one should look for in a partnership or a solution to a problem. The second is the unwillingness to budge when a compromise is expected in product quality or in a service level in order to meet some other outcome. This class helps you work on operational improvements and still maintain a no compromise attitude throughout your organization.

Course content description:

This course provides an entire organization with an inside look at improving customer service from telephone support through communication style to sales techniques. Everyone who interfaces with customers can benefit from this class. There is a portion that includes a teamwork exercise and several self evaluations to allow participants to gauge where they fit in their own development path.

You should attend if you are interested in:

Obtaining tools to help you better organize and gauge your own performance with respect to customer relations, telephone support and time management. Review teamwork keys to success and where you fit in the overall picture. Identify the 5 main keys to rapport building and how to gauge if you are a trusted advisor to your customers.

This course covers:

▶ The customer's perspective.
▶ Relationships with partners – how to become a trusted advisor and gain competitive preference .
▶ Time management and organization.
▶ Rapport building – not just knowing birthdays and anniversaries.
▶ Internal Teamwork- building a cohesive environment of proactive customer service, delivered with a sense of urgency.
▶ Communication policy and philosophy – phone, email, follow-up and call forwarding.
▶ Understanding your mission and the key role you play.
▶ Your company mission.

Your role.

COURSE #16

IT SPEAK FOR AV (3 Hours) - This class covers basic terminology for IT from an AV perspective. The class includes the fundamentals of IT and how to translate IT terms to the overall audiovisual system requirements. We discuss current options available on the market and how to categorize them for easy solution offering.

Course content description:

This class helps you find out how you and your customers can benefit from advancements in IT technology and how the AV industry can leverage these advancements in the implementation of integrated AV systems. You get a basic understanding of IT terms so you can use IT to improve management, scheduling and use of your AV facilities. This class explores the pros and cons of these AV/IT integrated devices. An open discussion explores the challenges of leveraging these solutions and to further explore some ideas on what the benefits and disadvantages are.

Learning objectives of this program:

1. Learn basic IT terms and be able to discuss specifications as they apply to AV solutions with IT personnel.
2. Gain a basic understanding of how and why AV products use certain IT protocols.
3. Learn to ask questions that get to IT personnel's needs and pains.

This course covers:

▶ Why care? (IT integrators v. AV integrators).
▶ Understanding the market (solutions v. hang and bang).
▶ Knowing who's who (IT, AV, chief technologies, C-level…).
▶ The application (control, content, both).
▶ The needs (AV, IT, political, financial).
▶ The benefits (ROI, TCO, fixing pains).

COURSE #17

SIMPLIFIED CONTROL SYSTEMS FOR STANDARD FIXED INSTALLS (3 Hours) - This class covers how to take "Hang and Bang" installations and increase usability by adding low-cost ease of use and increase functionality. Come learn how by going through a unique sales process, needs analysis and setting different expectations and understanding technology we can maintain our value in the solution.

Course content description:

This course covers the basics of how to define and develop a Simplified Control System for a Standard Fixed Installation and some of the terminology used in creating these basic control systems. A Standard Fixed Installation can also be referred to as a "Hang and Bang." This class helps us as technical sales people and sales engineers change our approach to these solutions from "Hang and Bang" to "Standard Fixed Installation" or "SiFi Install". The class includes a technical discussion and an examination of technical sales techniques used to perform a needs analysis that helps you specify a Simplified Control System for these Standard Fixed Installations.

Learning objectives of this program:

1. Learn basic control system terminology to develop needs and specifications.
2. Learn how simplified control systems can be cabled for easy installations.
3. Learn how to build easy to use interfaces for a pleasant customer experience.

This course covers:

▶ Basic terminology.
▶ Needs analysis.
▶ Features and benefits – benefit mapping to customer needs.
▶ Control communications and cabling.
▶ User interface.
▶ Integration and applications.

COURSE #18

IMPACT OF HDMI/DVI ON SYSTEM INTEGRATION (3 Hours) - Understanding the considerable advantages (and disadvantages) of digital video solutions and how they impact high definition capabilities. Participants learn the fundamentals of digital video specifications and the basics of high definition video and how to apply them to system requirements.

Course content description:

This course provides a quick review of the various types of analog and digital signals used in the Pro AV market, how they are transported and the cables used. Once that review baseline is established the class will cover the DVI and HDMI specifications and technologies. We explore the ins and outs of how to maintain the balance of quality and performance versus budget and simplicity. A demonstration compares analog HD vs. digital HD and the class sees the advantages and disadvantages in the transport and interfacing of digital signals. This class also covers the DisplayPort standard.

You should attend if you are interested in:

Getting a better understanding of how to choose and implement an AV system, if you are choosing between standard definition or high definition, if you are deciding on an analog or digital AV system, or if you are concerned about getting the highest quality video system for your worship, corporate and education facilities.

COURSE #19

BASICS OF SCALER TECHNOLOGY (1.5 Hours) – This course introduces the features and functions of scaler technology, not as a product demonstration, but rather as a technology discussion. This class discusses the pros and cons of using scalers in Pro-AV applications and the technology behind scaler functions.

Course Outline:

► The main purpose and function of scaling

► What scaling and scaling/switchers do

► Video signal basics

► The food chain of video

► How scalers work

► How scalers work in general AV applications

► Three main stages of how a scaler works

► Decoding, de-interlacing and scaling

► Hands-on demonstration of how scaling works

COURSE #20

BASICS OF SCALER TECHNOLOGY – ONLINE WHITE PAPER – (1 RU) This white paper is an example from the Kramer Library. After you download and study this white paper you are given a short quiz to test your knowledge of this key industry subject. Upon completing and passing the quiz you are awarded 1 RU. Keep an eye out for many more of these white paper training opportunities.

This course is available at www.krameracademy.com/scalerbasics

Note - Course #20 is an online version of this course good for 1 CTS RU at www.krameracademy.com/scalerbasics

COURSE #21

SUMMITVIEW™ - SYSTEM DEMONSTRATION AND EASE OF USE TRAINING

This course describes and demonstrates the new SummitView™ line of products from Kramer Electronics. SummitView™ offers simplified installation, an enhanced level of support and an increased level of ease of use. A competitive landscape for the end-to-end distribution, control and integration market is explained to help students understand the market. Kramer also provides a needs analysis tool to help attendees determine what SummitView™ or what other Kramer simplified control products best fits their environment.

Learning objectives of this program:

1. Understand the basics of simple control systems and system integration

2. Discuss the basics of ease of use and the impact on system design, install and support.

3. See a hands-on demonstration of the SummitView™ system and name three major advantages to using simplified system design, installation and support in Pro-AV.

COURSE #22

MATCH ME IF YOU CAN (3 Hours) - Solving Real-Life Analog and Digital Video Signal Interface Problems – an Exploration of Applications and Solutions

Course content description:

HDMI and DVI are digital video formats commonly used in home cinema, PC and AV installations. DisplayPort is an emerging digital format in the PC industry that is quickly making its way into future AV installations. The problems we are facing with EDID and HDCP in the digital world have brought to light similar issues in the analog world that are only getting tougher to overcome. While digital formats offer extremely high video image quality and other advantages, they were mainly developed for one source connected directly to one display, and therefore they introduce limitations and problems in large-scale AV installations that can be very troublesome if not addressed early in the process. It is more than just matching resolution; today the displays and distribution/ signal routing devices are challenging you to "match me if you can." Come learn about the signal interface issues we are facing today, see real world scenarios that illustrate these issues and discuss solutions as well as what you can do to design a future proof system.

Learning objectives of this program:

1. Convert between the formats and send the signals over distance.
2. Identify problems when using digital together with analog formats.
3. Prevent and solve EDID related issues.
4. See real world demonstrations and experience hands-on the methods and solutions available to you.

COURSE #23

PLUG AND PRAY (4 Hours) - Solving Real-Life Analog and Digital Video Signal Interface Problems – Defining the Problem in Detail

Course content description:

This course covers the topics in course 22 in greater detail and links to some other very important related topics. This course is intended for the engineers and technical people within our partner locations. It covers some of the topics on the impact of the digital transition and how HDMI, DVI and DisplayPort are used. Additionally, there is a more detailed description on how analog and digital video signals are impacted as well. The problems we are facing with EDID and HDCP in the digital world have brought to light similar issues in the analog world with new EDID information being used by displays. These issues are getting tougher to overcome in a short period of time and everyone is finding out that we are often left to "Plug and Pray." This class discusses technical issues on how digital formats provide extremely high quality video images and other advantages, but how they can also introduce limitations and problems in large-scale AV installations. If you are looking for answers to the problems these technologies are causing in your Pro AV solutions and you are looking for a clearer understanding of the problems, we encourage you to book and attend this course.

Learning objectives of this program:

1. Understand the four major impacts of the changes in Pro AV.
    - ▶ Raster v. pixel imaging
    - ▶ Resolutions (PC v. video based)
    - ▶ Aspect ratio
    - ▶ Formats and interfacing
2. Understand the basics of up-conversion, down-conversion and their inherent issues.
3. Discuss the limits of format conversion, up-conversion and down-conversion.
4. Explore and examine the possible solutions to interface and format conversion issues and build future-proof systems.
5. Understand the problems associated with EDID & HDCP handling in AV systems and system design and how to anticipate and overcome these problems.

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