Associated Builders and Contractors, Inc.
Southern California Chapter

EST YEAR ONE CONTENTS

CORE CURRICULUM 2015

Basic Safety (Construction Site Safety Orientation) ***(12.5 Hours)***
(Module ID 00101-15) Presents basic jobsite safety information to prepare workers for the construction environment. Describes the common causes of workplace incidents and accidents and how to avoid them. Introduces common personal protective equipment, including equipment required for work at height, and its proper use. Information related to safety in several specific environments, including welding areas and confined spaces, is also provided.

Introduction to Construction Math ***(10 Hours)***
(Module ID 00102-15) Reviews basic math skills related to the construction trades and demonstrates how they apply to the trades. Covers multiple systems of measurement, decimals, fractions, and basic geometry.

Introduction to Hand Tools ***(10 Hours)***
(Module ID 00103-15) Introduces common hand tools used in a variety of construction crafts. Identifies tools and how to safely use them. Also presents proper hand tool maintenance.

Introduction to Power Tools ***(10 Hours)***
(Module ID 00104-15) Identifies and describes the operation of many power tools common in the construction environment. Provides instruction on proper use, as well as safe-handling guidelines and basic maintenance.

Introduction to Construction Drawings ***(10 Hours)***
(Module ID 00105-15) Introduces the basic terms, components, and symbols of construction drawings, as well as the most common drawing types. Also covers the interpretation and use of drawing dimensions.

Introduction to Basic Rigging ***(7.5 Elective Hours)***
(Module ID 00106-15) Provides basic information related to rigging and rigging hardware, such as slings, rigging hitches, and hoists. Emphasizes safe working habits in the vicinity of rigging operations.

Basic Communication Skills ***(7.5 Hours)***
(Module ID 00107-15) Provides techniques for effective communication on the job. Includes examples that emphasize the importance of both written and verbal communication skills. Describes the importance of reading skills in the construction industry and discusses effective telephone and email communication skills.

Basic Employability Skills ***(7.5 Hours)***
(Module ID 00108-15) Describes the opportunities offered by the construction trades. Discusses critical thinking and essential problem-solving skills. Also identifies and discusses positive social skills and presents information on computer systems and their industry applications.

Introduction to Material Handling ***(5 Hours)***
(Module ID 00109-15) Describes the hazards associated with handling materials and provides techniques to avoid both injury and property damage. Also introduces common material handling equipment.

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Introduction to the Trade *(2.5 Hours)*
(Module ID 33101-10) Provides an overview of the alarm, telecommunications, and entertainment electronics industries. Introduces the elements of professional conduct and trainees' responsibilities to themselves and their employers, customers, and fellow workers.

Wood and Masonry Construction Methods *(12.5 Hours)*
(Module ID 33102-10) Reviews the materials and techniques used in constructing and finishing residential and commercial buildings, including wood frame, brick and block, and post and beam. Covers common drills, bits, and techniques used to drill through wood and masonry. Also describes types of fasteners used with these materials.

Concrete and Steel Construction Methods *(12.5 Hours)*
(Module ID 33103-10) Describes the materials and techniques used in constructing and finishing residential and commercial buildings, including poured and prefabricated concrete and structural steel. Covers common drills, bits, and techniques used to drill through concrete and steel. Also describes types of fasteners used with these materials.

Pathways and Spaces *(12.5 Hours)*
(Module ID 33104-10) Introduces conduits and wireways used in low-voltage applications, along with their supporting hardware and fittings. Covers telecommunications cable pathways from the source to the destination, including maintenance holes, ducts, equipment rooms, and telecommunications closets.

Craft-Related Mathematics *(12.5 Hours)*
(Module ID 33105-10) Expands on *Introduction to Construction Math* with an emphasis on the metric system, including how to convert between English and metric units. Also covers the use of scientific notation, powers and roots, and the basic concepts of algebra, geometry, and right-angle trigonometry.

Hand Bending of Conduit *(7.5 Hours)*
(Module ID 33106-10) Introduces conduit bending and installation. Covers techniques for using hand-operated conduit benders, as well as cutting, reaming, and threading conduit.

Introduction to the *National Electrical Code®* *(7.5 Hours)*
(Module ID 33107-10) Provides a road map for using the *NEC®* by introducing the layout and the types of information found within the code book. Allows trainees to practice finding information using an easy-to-follow procedure.

Low-Voltage Cabling *(20 Hours)*
(Module ID 33108-10) Covers the makeup, identification, and applications of conductors and cables used in telecommunications and security systems. Describes the tools, materials, and procedures for pulling cables through conduit and raceways.

DC Circuits *(15 Hours)*
(Module ID 33201-10) Introduces electrical concepts used in Ohm's law as applied to DC series circuits. Describes atomic theory, electromotive force, resistance, and electrical power equations. Introduces series, parallel, and series-parallel DC circuits. Covers Kirchhoff's voltage and current laws and circuit analysis.

AC Circuits *(20 Hours)*
(Module ID 33202-10) Introduces AC theory, circuits, and components, including inductors, capacitors, and transformers. Covers the calculation of reactance and impedance in RL, RC, LC, and RLC circuits using math and vector analysis.

Test Equipment *(10 Hours)*
(Module ID 33205-10) Covers the selection, inspection, use, and maintenance of basic test equipment used in low-voltage work. Also covers specialized test equipment such as signal generators, wattmeters, cable testers, and RF analyzers.

Introduction to Codes and Standards *(10 Hours)*
(Module ID 33207-10) Describes the scope and content of the major codes and standards that apply to telecommunications, life safety, security, and other low-voltage systems. Emphasis on familiarization with and use of the *NEC®*.

Cable Selection *(10 Hours)*
(Module ID 33208-10) Provides an overview of the types of cable used for low-voltage installations. Also covers the methods used to select the proper size and type of cable for a typical installation.

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Switching Devices and Timers *(15 Hours)*
(Module ID 33203-10) Presents the principles of operation and describes the different types and configurations of switches, relays, timers, and photoelectric devices. Covers guidelines for the selection of appropriate devices using specification sheets.

Semiconductors and Integrated Circuits *(10 Hours)*
(Module ID 33204-10) Introduces the principles of electronics and semiconductor theory, components, and applications.

Wire and Cable Terminations *(25 Hours)*
(Module ID 33209-10) Provides information and instructions for selecting, installing, and testing connectors and other
terminating devices on cables used in low-voltage work, including telecommunications, video and audio, and fiber optics.

Power Quality and Grounding *(20 Hours)*
(Module ID 33210-10) Covers grounding and bonding of electrical systems. Discusses *NEC®* regulations pertaining to grounding and bonding. Covers equipment and devices used for grounding and bonding, including their methods of installation. Explains power quality, along with the causes and effects of poor power quality.

Buses and Networks *(25 Hours)*
(Module ID 33301-11) Details procedures for connecting computers and components, including network connections. Provides information on connecting controls and equipment in a control system, and explains how data is transferred between the nodes in a network.

Fiber Optics *(25 Hours)*
(Module ID 33302-11) Introduces the types of equipment and methods used in fiber-optic cable installation.

Wireless Communication *(10 Hours)*
(Module ID 33303-11) Introduces operating principles and equipment used in radio frequency (RF) and infrared (IR) wireless communication systems. Covers RF communication systems, IR-controlled systems, power line carrier (PLC) systems, RF and IR wireless computer networks, and satellite communication systems. Discusses the equipment used for testing and troubleshooting wireless communication systems.

Site Survey, Project Planning, and Documentation *(15 Hours)*
(Module ID 33304-11) Explains planning a job from start to finish, including how to perform site surveys for new and retrofit construction projects. Covers drawings, specifications, and other documents commonly used.

Fundamentals of Crew Leadership *(20 Hours)*
(Module ID 46101-11) While this module has been designed to assist the recently promoted crew leader, it is beneficial for anyone in management. The course covers basic leadership skills and explains different leadership styles, communication, delegating, and problem solving. Jobsite safety and the crew leader's role in safety are discussed, as well as project planning, scheduling, and estimating. Includes performance tasks to assist the learning process.

Rack Assembly *(17.5 Hours)*
(Module ID 33305-11) Describes rack systems and best practices for assembling electronic system enclosures, including power sequencing, grounding, weight distribution, and heat dissipation. Explains electrical power distribution and load calculations for equipment housed within racks.

System Commissioning and User Training *(20 Hours)*
(Module ID 33306-11) Covers the final testing and closeout procedures and how to build these activities into projects. Describes customer satisfaction levels and expectations and how to meet them during the cut-over phase of any project. Focuses on industry best practices and user-required training.

Maintenance and Repair *(20 Hours)*
(Module ID 33307-11) Introduces tasks involved in the maintenance and repair of low-voltage systems and equipment. Presents a systematic approach to system and component-level troubleshooting and methods of identifying common types of repairs.

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Audio Systems *(30 Hours)*
(Module ID 33401-12) Introduces and explains audio system components, including input sources, amplifiers, signal processing equipment, and output equipment. Describes power requirements, cabling options, system configuration, and basic design considerations. Reviews common test equipment used for installation and troubleshooting.

Video Systems *(40 Hours)*
(Module ID 33402-12) Describes the types of equipment used in various video systems and equipment, including both analog and digital video, video signaling, display devices, HDTV, 3-D video, and video processing and distribution.

Broadband Systems *(40 Hours)*
(Module ID 33403-12) Describes the major elements of headend design for specialized television systems, including CATV, SMATV, and MATV systems. Explains receivers, modulators, amplification, and distribution devices. Explains proper signal levels, cable attenuation, insertion loss, and acceptable carrier-to-noise levels. Covers common test equipment and troubleshooting procedures.

Media Management Systems *(20 Hours)*
(Module ID 33404-12) Explains the basic principles behind shared media resources and their access via a computer network or hardwired application. Describes media types for both analog and digital platforms. Explores cabling options including fiber-optic interfaces.

Telecommunications Systems *(20 Hours)*

(Module ID 33405-12) Describes the history and current use of basic subscriber systems. Also covers PBX systems used in business applications and Central office services used to interface to the public switched telephone network (PSTN).

Residential and Commercial Building Networks *(25 Hours)*
(Module ID 33406-12) Describes how home and business systems such as fire alarms, security, energy, and entertainment can be integrated using specialized smart home and building management software and controllers. Describes best practices for system interoperability and performance. Discusses various interconnection options and integration protocols.

Intrusion Detection Systems *(30 Hours)*
(Module ID 33407-12) Describes devices such as sensors, notification, control panels, and programming used in intrusion detection security systems. Covers system design and installation guidelines, wiring, testing, and troubleshooting. Emphasizes codes and standards.

Fire Alarm Systems *(40 Hours)*
(Module ID 33408-12) Covers the basics of fire alarm systems, including devices, circuits, system design and installation guidelines, power requirements, control panel programming, testing, and troubleshooting. Explores integration of fire alarms with other systems. Examines both residential and commercial fire alarm applications, emphasizing *NEC®* requirements.

Overview of Nurse Call and Signaling Systems *(15 Hours)*
(Module ID 33409-12) Presents an overview of nurse call and signaling systems as found in hospitals and other health-care facilities. Covers basic emergency call and duress system requirements based on facility type. Identifies installation requirements based on UL and other building code specifications.

CCTV Systems *(30 Hours)*
(Module ID 33410-12) Describes the installation and configuration of closed circuit TV systems for small, medium, and large facilities. Explains various equipment, including cameras, lenses, remote-positioning, video recording, and transmission. Covers the roles of the internet and digital technologies. Introduces test and troubleshooting equipment.

Access Control Systems *(35 Hours)*
(Module ID 33411-12) Introduces access control systems, including applications, door locking systems, readers, biometrics, and controllers. Emphasizes installation practices as well as building and electrical codes.