

INTERIM CREDENTIALS

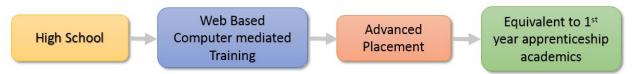
Advanced placement into over 274 nation-wide IBEW/NECA Electrical Training Centers.



LEARN THE THEORY

The *Electrical Training ALLIANCE* Interim Credentials allows high school or post-secondary students to achieve all the required courses (Orientation, DC Theory, Job Information, Blueprints, and Electrical Code/Safety) for advanced placement into the 2nd year of over 274 Nation-wide IBEW/NECA Electrical Apprenticeship Training programs. The student can complete a 5-year highly technical electrical apprenticeship within four years to Journeyman Electrician status. Journeyman Electricians are employable in a wide variety of electrical occupations such as commercial, hospital, industrial, institutional, and high technology careers.

The *Electrical Training ALLIANCE* Interim Credentials curriculum is delivered utilizing the latest in computer-mediated instructions through an online Learning Management System (LMS). The content is sequenced in bite-size learning that utilizes animations, gaming, virtual and augmented activities, interactive videos, and many other visual communications. The courses can be self-regulated or blended in a classroom setting with an instructor. When used as a credited high school program, the administrator and instructors has full control over every aspect of the course delivery, including a vast amount of reporting options and the ability to export final results.



The *Electrical Training ALLIANCE* Interim Credentials curriculum is the result of over 75 years of curriculum development and work experience of the IBEW/NECA Electrical Industry. The vast experiences of over 4000 instructors through 285 electrical training centers has provided the expertise to train over 40,000 electrical apprentices each year, resulting with the knowledge and skills to successfully work in a lifetime of rewarding electrical

The *Electrical Training ALLIANCE* Interim Credentials program is a head start into one of the most successful electrical apprenticeship in North America! But it also provides a solid electrical background to enter into a technical college electrical program. One of the main advantages of the curriculum is the student becomes familiar with various electrical occupations and has the basic understanding to

choosing the next step of training for an electrical career.

careers.

Interim Credentials - Orientation Syllabus

Description

This course will introduce the student to the overall goal of proceeding courses as well as the expectations of the student as they progress as an apprentice electrician. The course is broken down into four individual lessons.

Expectations and Goals

Each student is expected to complete each e-learning lesson that is present on the Learning Management System (LMS). Within each lesson, students will be expected to view videos and take part in exercises and assessments to test their knowledge and mastery of the content.

Course Materials

This is an online, asynchronous course. All materials will be provided through the Learning Management System (LMS) after logging in with the provided credentials. Access to all materials is depended upon an active internet connection and internet browser to include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

Grading

Student will be given summative assessments throughout the four lessons. These assessments will aggregate into one final grade for the course to show mastery of the content.

Lesson	Topic	Exercises
1	Introduction	Knowledge Check
2	Apprenticeship	Knowledge Check
3	Responsibilities	Knowledge Check
4	Safety	Knowledge Check

Interim Credentials - Job Information

Description

This course is designed to present students with information and simulations that take place on the job site as an apprentice. This includes the introduction to the tools of that an electrician will use on a daily basis, workplace basics, and the various materials that they will come in contact with.

Expectations and Goals

Each student is expected to complete each e-learning lesson that is present on the Learning Management System (LMS). Within each lesson, students will be expected to view videos and take part in exercises and assessments to test their knowledge and mastery of the content.

Course Materials

This is an online, asynchronous course. All materials will be provided through the Learning Management System (LMS) after logging in with the provided credentials. Access to all materials is depended upon an active internet connection and internet browser to include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

Grading

Students will be given formative assessments throughout the twelve lessons. These are not graded and will not aggregate into the final score for the course. A final summative assessment in the form of a remediation game will be taken at the end of each lesson. The score for each question will be aggregated into the final overall score for the course. All remediation questions start out with three available points. Each student will have multiple attempts on each question. For every incorrect response, remediation is given with another attempt. For each subsequent attempt, one point is deducted from the maximum score that each student can receive on that question.

Lesson	Topic	Objectives	Assessments
1	Introduction	Identify the basic objectives of Job Information	N/A
2	Absenteeism	Recognize the significance of absenteeism, productivity, and marketplace conditions to your success in the electrical industry	Knowledge Checks Remediation
		Recognize how your attitudes and actions related to absenteeism, productivity, and	Game

Lesson	Topic	Objectives	Assessments
		marketplace conditions may affect your career and the success of your employing organization	
3	Electrical	Identify the apprentice role in working with journeymen	Knowledge Checks
	Worker	Recognize the apprentice role in maintaining a clean, neat workplace	Remediation Game
		Identify safe work practices related to trash, debris, tools, and materials	
		Recognize the significance of maintaining a clean, neat personal appearance	
		Identify appropriate ways to dress and behave on the worksite	
		Recognize basic types of PPE used by an electrical worker	
4	Tools of the Trade	Identify hand and power tools used in the electrical industry	Knowledge Checks
		Recall uses for hand and power tools used in the electrical industry	Remediation Game
		Recall guidelines for safe tool usage	
		Recall guidelines for tool maintenance	
5	Use and Care for Ladders	Identify safe methods and work practices for using ladders	Knowledge Checks
		Identify unsafe conditions and unsafe usage of ladders	Remediation Game
		Identify and describe proper maintenance of a ladder	
6	Masonry and Fasteners	Recall the basic characteristics, binding methods, and body styles of masonry fasteners	Knowledge Check Remediation
		Identify the three types of masonry surfaces relevant to the work of an electrical worker and the factors needed to be considered when choosing the correct fastener	Game
		Recognize load, environmental and specification considerations related to holding value and selecting the best anchor for an application	

Lesson	Topic	Objectives	Assessments
		Recall the two rules pertaining to the spacing of an anchor	
7	Twist On Connectors	Identify the purpose and use of twist-on wire connectors	Knowledge Checks
		Recognize various types, colors, and styles of twist-on wire connectors	Remediation Game
		Recall rules and considerations for selecting the proper twist-on wire connector for a particular application	
		Recall the installation process for twist-on wire connectors	
8	Commonly Used Items	Recognize materials that are commonly used to construct electrical installations	Knowledge Checks
			Remediation Game
9	Sizing and Building Wires	Analyze the National Electrical Code (NEC) to determine wire size based on the mil area of a	Knowledge Checks
		single strand of a conductor	Remediation
		Determine the current carrying capacity of a conductor based on the NEC, Article 310	Game
		Identify conductor insulation properties based on temperature-ambient or from the current producing heat in the conductor	
10	Aluminum Conductors	Identify characteristics of aluminum wiring	Knowledge
		Learn to connect, terminate, and splice aluminum wiring and conductors	Checks Remediation
		Recognize effects of bending aluminum conductors	Game
		Identify rules and resources related to bending aluminum conductors	
		Identify tools, resources, and equipment for the proper installation of aluminum conductors	
11	Metric System	Demonstrate an understanding of the metric system	Knowledge Checks
		Explain the advantages of the metric system	Remediation
		Explain the value of the metric prefixes	Game

Lesson	Topic	Objectives	Assessments
		Complete accurate calculations between the English and metric systems, between prefixes, and between prefixes and whole numbers	
		Use powers of 10 to quickly perform basic mathematical functions	
12	Alignment and Measure	Identify basic layout and measurement applications	Knowledge Checks
		Identify traditional alignment and measurement tools	Remediation Game
		Identify laser tools and their uses, safety, and care	

Interim Credentials - Codes and Safety Syllabus

Description

This course is focused on introducing students to the National Electrical Code (NEC) and the proper safety techniques and practices of an electrician. This course includes six e-learning, asynchronous lessons that are outlined in further detail below.

Expectations and Goals

Each student is expected to complete each e-learning lesson that is present on the Learning Management System (LMS). Within each lesson, students will be expected to view videos and take part in exercises and assessments to test their knowledge and mastery of the content.

Course Materials

This is an online, asynchronous course. All materials will be provided through the Learning Management System (LMS) after logging in with the provided credentials. Access to all materials is depended upon an active internet connection and internet browser to include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

Grading

Student will be given formative assessments throughout the six lessons. These are not graded and will not aggregate into the final score for the course. A final summative assessment in the form of a remediation game will be taken at the end of each lesson. The score for each question will be aggregated into the final overall score for the course. All remediation questions start out with three available points. Each student will have multiple attempts on each question. For every incorrect response, remediation is given with another attempt. For each subsequent attempt, one point is deducted from the maximum score that each student can receive on that question.

Lesson	Topic	Objectives	Exercises
1	Safety	Define the purpose and intent of the code	Knowledge
		Demonstrate a working knowledge of the NEC, including its applications	Checks Remediation
		Apply Article 100 to locate definitions contained in Article 100	Game

Lesson	Topic	Objectives	Exercises
		Identify several potential problems which might lead to electrical shock	
		Describe the operation of GFCI	
		List an employer's responsibility in providing safe electrical equipment on the job	
		Describe OSHA requirements regarding Ground- Fault Circuit Interrupters and the "Assured Equipment Grounding Conductor Program	
		Explain the potential dangers of falling objects	
		Understand some basic rules to set-up and use a scaffold in a safe manner	
		Identify and list scaffold safety rules	
2	Introduction to	Explain the purpose and intent of the Code	Knowledge Check
	the NEC	Determine the scope of the Code as to where it does or does not apply	Remediation Game
		Demonstrate a working knowledge of the NEC, including its application	
3	Interpreting of the Language of the NEC	Apply Article 100 to locate definitions contained in Article 100	Knowledge Check Remediation
		Recognize that a term must be listed in more than one article to appear in Article 100	Game
		Recognize that a term appears in the .2 section of an article when the definition is only used in that article	
4	Understanding and Applying Article 110 of NEC	Identify where terms that are used in only one article are defined	Knowledge Check Remediation
		Describe how terms in the second section of an article are applied	Game
5	Wire and Insulation	Identify materials recognized by the Code for use as electrical conductors	
	Properties	Compare the ability of different metals to conduct electricity	
		Identify some of the on-the-job applications of Code regulations pertaining to electrical conductors	
		Describe why some materials are better conductors or insulators than other	

Lesson	Topic	Objectives	Exercises
		Identify materials more commonly used as conductors or insulators	
		Use letter symbols to identify various types of insulation used on wires	
		Identify materials recognized by the Code for use as conductor insulation	
		Discuss the effect heat has on insulation and the temperature ratings of conductors	
6	Introduction to Wiring Devices	Identify the different components of a wiring device	Knowledge Check Remediation
		Be familiar with the general requirements to installing wiring devices	Game
		Be familiar with the best practices for installing wiring devices	

Interim Credentials - DC Theory Syllabus

Description

This course will introduce students to intricacies of DC Theory. Students will learn the fundamentals of circuits, wiring, and the mathematical ways in which an electrician works on a daily basis that includes the relationship between voltage, current, and resistance. This course is a simulation based e-learning that has the students actively trying to bring a starship's engines back online. The course is broken down into eight individual missions.

Expectations and Goals

Each student is expected to complete each e-learning mission that is present on the Learning Management System (LMS). Within each mission, students will be expected to view videos and take part in exercises and assessments to test their knowledge and mastery of the content.

Course Materials

This is an online, asynchronous course. All materials will be provided through the Learning Management System (LMS) after logging in with the provided credentials. Access to all materials is depended upon an active internet connection and internet browser to include the latest version of Firefox, Google Chrome and Google Chromebooks (2006 or newer).

While in the lessons, navigation is done through by selecting the arrows at the right or left of each screen. The lessons, and course, are complete when the student has gone through each part of the lesson and all activities and games are completed. Should the student log out of the lesson, course progression will be saved for their next log on.

Grading

Student will be given formative assessments throughout the eight missions. These are not graded and will not aggregate into the final score for the course. A final summative assessment in the form of a challenge will be taken at the end of each mission. The score for each question will be aggregated into the final overall score for the course. All remediation questions start out with three available points. Each student will have multiple attempts on each question. For every incorrect response, remediation is given with another attempt.

Mastery of this course is defined through the completion of all of the learning activities in each lesson as well as completion and passing scores on the remediation games. Each activity or question is aligned to a specific objective.

Mission	Topic	Objectives	Assessments
1	Electrical Basics	Identify the fundamentals of electricity	Knowledge
		Define atomic theory	Checks
		Describe the relationship between positive and negative charges	Challenges
2	Series Circuits	Describe a series DC circuit	Knowledge
		Identify which specific component of a circuit is being represented by a specific symbol on a schematic drawing	Checks Challenges
		Draw the correct symbol for electrical or electronic components when make schematic drawings	
		Describe the type and construction of various standard resistors, including the resistance value, wattage rating, and tolerance	
		Determine a resistor value and tolerance by using its color bands	
		Calculate total resistance in a series circuit	
		Describe how the total current works in a series circuit	
		Calculate component voltage in a series circuit	
		Determine wattage loads and total watts of a series circuit	
3	Parallel Circuits	Describe the branching and reconnecting of alternate current paths in parallel circuits	Knowledge Checks
		Calculate total resistance of a variety of resistance values in parallel	Challenges
		Determine circuit voltage and branch voltages in parallel circuits	
		Calculate the currents in the individual branches of parallel circuits	
		Determine the total current in parallel circuits by determining the equivalent resistance of the circuit and solving for current	

Mission	Topic	Objectives	Assessments
		Determine total current by finding the current in each branch and then solving for total current	
		Use Watt's laws to determine branch wattage and total circuit power in parallel circuits	
4	Combination Circuits	Identify alternative current paths in a combination or series-parallel circuits	Knowledge Checks
		Determine which components are in a series and which are in parallel in combination circuits	Challenges
		Apply series or parallel rules to determine the current through any branch or component of a combination circuit	
		Reduce any combination circuit to an equivalent resistor	
		Find voltage values for different parts of a combination circuit	
		Determine each circuit component's current, ohrmic, voltage, and power values	
		Work with circuit components to find unknown component values elsewhere in the circuit	
		Calculate circuit total current resistance, voltage, and power values	
5	DC Circuit	State the law of proportion for series circuits	Knowledge
	Analysis	Describe the voltage dividers in series circuits	Checks
		Explain the difference between directly proportional and inversely proportional relationships	Challenges
		State the Law of Proportionality as it applies to series and parallel circuits	
		Solve problems involving resistors in parallel, using the Law of Proportionality	
		Apply Kirchoff's Laws to solve for circuit variables in complex circuits	
		State the steps necessary to apply the Principle of Superstition	

Mission	Topic	Objectives	Assessments
		Apply the theory of superposition to solve for multiple voltage source circuits	
		Explain Thevenin's and Norton's Theorems	
		Apply Thevenin's and Norton's Theorems to solve for circuit unknowns	
6	Circuit Theory and Switches	Identify the relationship between wires and conductors	Knowledge Check Challenges
		Describe circuit concepts of open, closed, and short circuits	onanonge:
		Determine the current flow scenarios for open, closed, and short circuits	
		Describe switch patterns in schematic form	
		Recognize switch ratings	
		Troubleshoot basic switch problems	
		Explore material effects and variations of resistance on conductors	
		Determine the conductor gauge	
		Determine circular mil and square mil cross- sectional area of conductors	
		Analyze incandescent lamps as loads	
7	Magnetism and Electromagnetism	Identify and define key terms: the terms, laws and theories of magnetism	Knowledge Check Challenges
		Identify and define key terms: magnetic field, electromagnet, generator and electrical polarity	onanongos
		Determine polarity of magnetic poles	
		Analyze the effects of magnetic fields on producing electricity	
8	Generators and Motors	Explain the basic principles involved in generating DC power	Knowledge Check Challenges
		Describe the basic construction and operation of simple DC generators	o.iuiioiigos
		Demonstrate the Left-Hand Rule for Generators to show relative motion, magnetic flux, and electron flow	

Mission	Topic	Objectives	Assessments
		Describe the variable that determine the level of voltage output by a generator	
		Identify the components of a DC machine	
		Explain how a DC motor turns and can determine the direction of motion	

Interim Credentials - Blueprints Syllabus

Description

This course is focused on introducing students to the process of reading, measuring, and interpreting blueprints. While on the jobsite, students will be expected to be able to understand exactly what is in front of them and be able to interpret drawings and schematics.

Expectations and Goals

Each student is expected to complete each e-learning lesson that is present on the Learning Management System (LMS). Within each lesson, students will be expected to view videos and take part in exercises and assessments to test their knowledge and mastery of the content.

Course Materials

This is an online, asynchronous course. All materials will be provided through the Learning Management System (LMS) after logging in with the provided credentials. Access to all materials is dependent upon an active internet connection and internet browser to include Internet Explorer, Google Chrome, Mozilla Firefox, and Safari.

While in the lessons, selecting the arrows at left and right. The lessons, and course, are complete when the student has gone through each part of the lesson and all activities and games are completed. Should the student log out of the lesson, course progression will be saved for their next log on.

Grading

Student will be given formative assessments throughout the seven lessons. A final summative assessment will be given within the LMS that is administered and proctored by a member of the Electrical Training Alliance. The score for each question will be aggregated into the final overall score for the course.

Mastery of this course is defined through the completion of all of the learning activities in each lesson as well as completion and passing scores the assessments. Each activity or question is aligned to a specific objective.

Lesson	Topic	Objectives	Exercises
1	Evolution of the Blueprint Draft	Identify the role of a Blueprint	NA
2	Projections and Perspectives	Identify the different types of projections used in blueprint drawings	Knowledge Check
		Recognize and label the views on orthographic, isometric, and oblique drawings	
		Explain the steps used in creating orthographic, isometric, and oblique drawings	
3a	Related Math	Convert feet to inches and inches to feet	Knowledge Check
		Add and subtract feet and inches	
		Calculate area	
		Calculate volume	
3b	Scaling and Dimension	Describe the need for scale and its uses	Knowledge Check
		Recognize and select the proper scale for the appropriate task	
		Scale a drawing accurately	
		Differentiate between extension lines and dimension lines	
		Identify the rules and concepts of print dimensioning	
4	Architectural Considerations	Identify the function of plans, elevations, sections, details, schedules, and specifications	Knowledge Check
		Explain the impact that addenda and revisions have on the construction process	
		Locate the information found on a title block	
		Describe the division of prints by discipline	
5	Schedules and Specs	Identify the information found on various schedules	Knowledge Check
		Identify the information found in specification	
		Determine what schedules to use for specific situations	
		Determine when to use specifications	

Lesson	Topic	Objectives	Exercises
6	Residential Print Reading	Explain the process of studying a residential print	Knowledge Check
		Identify the various prints used on a residential project	Remediation Game
		Utilize plans and elevations to determine device placement and electrical service location	
		Visualize a residence by looking at a set of residential construction drawings	