

APPRENTICESHIP (APR)

APR-102IE Inside Electrical Residential Installations

6 credits, Fall/Winter/Spring

This course focuses on the fundamentals of electrical installations in residential dwellings and is based on the National Electrical Code (NEC) and the Oregon Electrical Specialty Code (OESC). Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

APR-103IE Inside Electrical Intro to Theory

6 credits, Fall/Winter/Spring

This course is intended to provide direct current theory comprehension including atomic structures, static electricity, magnetism, resistors, series and parallel circuits, and combination circuitry. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

APR-104LM Reading Schematics and Symbols

2 credits, Not Offered Every Term

A basic course of study that will develop the student's understanding of reading schematics and symbols through lectures and hands-on examples.

APR-104MA Print Reading

3 credits, Not Offered Every Term

Introduction to basic print reading. Students will use the principles of orthographic projection and current industry standards as they apply this knowledge to interpreting manufacturing prints.

APR-106MA Advanced Applied Geometric Dimensioning and Tolerancing for Manufacturing

1-3 credits, Not Offered Every Term

Introduces participants to the application of gauging and inspection using Geometric Dimensioning and Tolerancing (GDT). Students will identify inspection equipment and inspect GDT characteristics while experiencing their manufacturing implications.

Prerequisites: APR-104MA

APR-108LM ARC Flash Electrical Safety

1 credits, Not Offered Every Term

This electrical safety training course provides the student with a basic understanding of safe workplace practices from industry standards and recommended practices, including NFPA 70E, IEEE, NEC, NESC and OSHA requirements.

APR-109PB Plumbing Conservation Systems

2 credits, Fall/Winter/Spring

This course introduces the student to the different plumbing systems in use today that reflect new technology and methods which conserve our natural resources. Solar Energy, Rainwater Harvesting, Reclaimed Water Systems, Vacuum and other minimum water consumptions systems.

Recommended: Student must be a currently registered Plumbing Apprentice with Area I, Joint Apprenticeship Training Committee

APR-110UM Initial Meterman Training

4 credits, Not Offered Every Term

This course is designed to instruct Meterman apprentice candidates on understanding the basic functions of a Meterman Journeyman. Required: Student Petition.

APR-111LE Residential Technologies

4 credits, Not Offered Every Term

During this course the student will receive an overview of the wide range of topics relating to residential technologies and in-depth instruction and hands-on experience on select topics. The course will cover home theater, multi-zone audio and video, HD television, networking, home automation, cabling techniques and applicable National Electrical Code articles. There will be an emphasis on how these systems integrate with each other.

Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

Prerequisites: APR-115LE

APR-111MA Manual Machining I

4 credits, Not Offered Every Term

This course is an introduction to machine tool operation and precision measurement. It covers elementary operation of drill presses, bandsaws, lathes, and milling machines. The course includes external threading.

Recommended Prerequisite or Corequisite: APR-104MA and MTH-050

APR-111UE Line Estimator Basic I: Tools and Equipment

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will learn to explain and summarize the basics of electric utility energy systems. The focus is on estimator field responsibilities and equipment used in the field.

APR-111UL Outside Electrical Basic Theory I

5 credits, Fall

Fundamentals of outside electrical apprenticeship related training.

National Electrical Code standards, basic electrical Direct Current (DC) theory including Ohms law, electrical terminology, mathematical applications in electrical energy, rigging and safe work practices.

Required: Student Petition.

Required: Acceptance into Line-Electrician Apprenticeship program

APR-111UM Metering: Basics I

5 credits, Fall

In this course students will examine first-year apprentice responsibilities including job conduct, absenteeism, sexual harassment, drug use and safety. Also, students will begin the first step of electrical trade theory by reviewing math concepts including percentages, scientific notation, metric prefixes, ratios and proportions, and equations. As the lessons progress, electrical topics such as current, voltage, resistance, Ohm's Law, power, and DC series and parallel circuits will be introduced.

Required: Student Petition.

APR-111UW Basic Substation Wireman I

5 credits, Fall

In this course, students will examine apprentice responsibilities including job conduct, absenteeism, sexual harassment, drug use and safety.

Students will also begin the first step of electrical trade theory by studying basic math concepts, including whole numbers, fractions, decimals, percentages and equations. As the lessons progress, electrical components such as current, voltage, resistance, Ohm's Law and power will be introduced. This course is part of the NJATC Substation curriculum. Required: Student Petition.

APR-112LE Basic Trade, Code & Safety

4 credits, Not Offered Every Term

Covers the basic fundamentals of low voltage cabling, fundamentals of workplace safety as it applies to construction in general and specific trade environments, and an overview of the current national electrical code and trade-related mathematics. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-112MA Manual Machining II

4 credits, Not Offered Every Term

This course is a continuation of machine tool operations. It covers set-up and operation of the vertical milling machine, lathe boring techniques, surface grinding and screw thread nomenclature.

Prerequisites: APR-111MA

APR-112UE Line Estimator Basic II: Electrical Theory

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern electrical field operations. Students will utilize math and electric theory applications in the field. The focus is on electric utility systems.

APR-112UL Outside Electrical Basic Theory II

5 credits, Winter

Instructs first year, second term apprentices in electrical-related training. National Electric Code (NEC) standards, application of electrical Direct Current (DC) theory, including Ohm's law, electrical grid components, rigging, OSHA regulations, electrical terminology and mathematical applications. Required: Student Petition.

Prerequisites: APR-111UL

APR-112UM Metering: Basics II

5 credits, Winter

This course is designed to further first-year apprentice training by building on the concepts of electrical trade theory and introducing students to the aspects of substation safety. Apprentices will have the opportunity to use analog or digital meters to measure voltage, current, and resistance in DC circuits. Fundamentals of substation safety will be explored including responsibilities, personal protective equipment, fall protection, grounding and electrical hazard awareness. Required: Student Petition.

Prerequisites: APR-111UM

APR-112UW Basic Substation Wireman II

5 credits, Winter

Basic Substation Wireman II will build on the concepts of electrical trade theory and introduce students to the aspects of substation safety. Students will have the opportunity to use analog or digital meters to measure voltage, current, and resistance in DC circuits. Fundamentals of substation safety will be explored including responsibilities, personal protective equipment (PPE), fall protection, grounding and electrical hazard awareness. This course is part of the NJATC substation curriculum.

APR-113LE Specialized Control Systems

4 credits, Not Offered Every Term

Introduces specialized control systems, equipment and control devices with a physical, code and safety view. Control design and applications, installation, maintenance and measurements of low- and high-voltage systems will be covered. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-113MA Manual Machining III

4 credits, Not Offered Every Term

This course is a continuation of machine tool operations. Topics covered include offset boring heads, rotary tables, indexing devices, taper attachments and cylindrical grinding. Additional emphasis is also placed on inspections technique, technical math and optical comparators.

Prerequisites: APR-112MA

APR-113UE Line Estimator Basic III: Wire Circuits

4 credits, Not Offered Every Term

This course covers principles and concepts that govern safe wiring and circuit applications, safe working procedures, Ohm's Law calculations and use of aerial lift in field operations. The focus is on electric utility systems. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-113UL Outside Electrical Basic Theory III

5 credits, Spring

Instruct first year, third term apprentices on fundamentals of electrical components and their application, National Electrical Code (NEC) standards, application of electrical Direct Current (DC) theory including Ohm's law, underground distribution, mathematical applications and safe work practices. Required: Student Petition.

Prerequisites: APR-112UL

APR-113UM Metering: Basics III

5 credits, Spring

This course continues first-year apprentice training by applying mathematics, electron theory and all aspects of DC electric circuit evaluation and construction and safe work practices. Required: Student Petition.

Prerequisites: APR-112UM

APR-113UW Basic Substation Wireman III

5 credits, Spring

Basic Substation Wireman III continues student training with the study of substation construction from prints to superstructure and bus design. Students will learn about various types of substation prints and drawings including single-line diagrams and schematics. This course will explore attributes of substation construction including foundations, platforms, ground grids, steel structures and the use of a boom truck and lift calculations. This course is part of the NJATC substation curriculum.

Required: Student Petition.

Prerequisites: APR-112UW

APR-114LE Data Communications

4 credits, Not Offered Every Term

This course provides a comprehensive understanding of Data Communications and Networking with practical application. Hands-on terminations of common cabling types (including optical fiber) and installation methods and standards. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-115LE Amplified Systems

4 credits, Not Offered Every Term

This course will cover audio theory, design and installation of audio and related systems and applicable National Electrical Code articles. There will be an emphasis on how amplified systems integrate with telecommunications equipment. Specific audio systems include intercom, loudspeaker paging, sound reinforcement and multi-zone. This course will also cover telecom basics including circuit types, PBXs and key systems and troubleshooting. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-115UW Substation Metering & Relay Overview

2 credits, Not Offered Every Term

This course introduces the apprentice to the duties of Substation Metering & Relay Technicians. It outlines how to perform testing, calibration, maintenance, installation and trouble shooting on new or existing equipment and circuit installation. It also details how to obtain line fault data and investigate equipment outages throughout the system on substations and/or switch yard equipment. In addition, this course provides the student with one-on-one time spent in the field with a Substation Metering & Relay Technician.

Required: Attend all required days to be eligible for program credits

APR-116LE Security Systems

4 credits, Not Offered Every Term

Covers the fundamentals of designing, installing, and integration of a typical burglar (security) system and an access control system. Students will understand what the minimum required components are for each type of system, as well as what type of components are best suited for a given situation. A basic understanding for programming shall be provided. National Electric Codes relevant to these systems shall be reviewed. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-116UM Network Data Operations (NDO) Overview

1 credits, Not Offered Every Term

This course will give the meterman apprentice an overview of smart meter operations and associated systems/servers including Meter Data Collection (MDC), Sensus, Total Metering Solution (TMS), and MV90, the industry standard for information collection and storage. The Meterman Apprentice will gain a better understanding of the process around the use of smart meter data, including validation of the usage to ensure accurate readings as well as an understanding of alarms the meter can trigger out in the field.

APR-117PB Plumbing Basic Trade & Code

3 credits, Not Offered Every Term

Introduction to plumbing trade, tools and safety; mathematical functions review, scale rulers and gauges; related science relative to water, sewage, gases and dangers of waste products.

Required: Acceptance into Plumbers Apprenticeship program

APR-117UM Special Tester Overview

2 credits, Not Offered Every Term

Apprentices will experience the daily duties of Special Testers as they do power quality testing and troubleshooting. They will learn what computer skills and applications are required, and meet the many work groups that Special Testers come in contact with. Required: Student Petition.

APR-118UL Transformer Connections I

1 credits, Fall/Winter/Spring/Summer

Designed to instruct apprentices or journey-level workers on the basic fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer Training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.

Required: Journeyman lineman or second step apprentice

APR-118UM Leadman Repairman Overview

2 credits, Not Offered Every Term

Apprentices will experience the daily duties of Leadman Repairman as they investigate customer service calls and install, maintain and remove customer services. Required: Student Petition.

APR-119PT Basic Trade & Safety

2 credits, Not Offered Every Term

Covers the history of painting, painting trade careers, professionalism in the painting trade, safety, and painting equipment & tools. Required: Student Petition.

Required: Acceptance into Painters Apprenticeship program

APR-121ECE Observation and Guidance I in ECE Settings

4 credits, Winter

Course is designed to help students explore in depth observation and recording techniques of children's development and learning and to examine various child guidance techniques for children from birth - 3rd grade. Students will be provided with strategies to assist them in providing positive guidance to children in a variety of settings and situations.

APR-121UE Line Estimator Theory I: Operations

4 credits, Not Offered Every Term

This course covers the principles and concepts of electrical laws, codes, work safety habits, electrical calculations and electrical apparatus for power line work. the focus is on installation process for transformers, test equipment and field equipment.

Required: Acceptance into Line Estimator Apprenticeship program

APR-121UL Outside Electrical Fundamental Theory I

5 credits, Fall

Instruct second-year apprentices on the principles and concepts of electrical laws, codes, work safety habits, electrical calculations, electrical apparatus for power line work and the installation process for transformers, test equipment and field equipment.

Prerequisites: APR-113UL

APR-121UM Metering: Fundamentals I

5 credits, Fall

This course is designed to instruct second-year apprentices on the fundamentals of AC theory including the following: DC review, trigonometry review, Resistive-Capacitive (RC), Resistive-Inductive (RL), Resistive-Capacitive-Inductive (RLC) circuits, series and parallel resonance. Required: Student Petition.

Prerequisites: APR-113UM

APR-121UW Fundamental Substation Wireman I

5 credits, Fall

Fundamental Substation Wireman I continues to explore high voltage substation equipment including transformers, switches, and reactive equipment. Students will also build on their knowledge of Direct Current (DC) theory while beginning the study of the fundamentals of Alternating Current (AC) theory. This course is part of the NJATC substation curriculum. Required: Student Petition.

Prerequisites: APR-113UW

APR-122UE Line Estimator Theory II: Standards

4 credits, Not Offered Every Term

This course covers the principles and concepts of codes that dictate performance standards and safe work practices found in OSHA 1910.269. The focus is on interpreting schematic drawings, reading blue prints and staking sheets, methods for storing explosives, crane set up and criteria for safe boom lift.

Required: Acceptance into Line Estimator Apprenticeship program

APR-122UL Outside Electrical Fundamental Theory II

5 credits, Not Offered Every Term

Instruct second-year, second term apprentices on outside electrical apprenticeship related training as it applies to math, construction standards, vectors and safe work practices in electrical energy applications. Required: Student Petition.

Prerequisites: APR-111UL, APR-112UL, and APR-113UL

APR-122UM Metering: Fundamentals II

5 credits, Winter

This course is designed to instruct second-year apprentices on the graphic representation of system parameters (i.e. currents & voltages) and the various transformer line-ups that create those parameters.

Required: Student Petition.

Prerequisites: APR-121UM

APR-122UW Fundamental Substation Wireman II

5 credits, Winter

Fundamental Substation Wireman II identifies the role that transformers play in substations and takes a closer look at on-the-job safety. Included will be information on transformer construction, connections, tap changers and protection, as well as an introduction to transformer test instruments. Safety aspects will include lock-out/tag-out procedures, transformer hazards, grounding and step and touch potentials. Safety will be covered in greater detail, focusing on protective grounding live-line tools and arc flash compliance. This course is part of the NJATC substation curriculum. Required: Student Petition.

Prerequisites: APR-121UW

APR-123UE Line Estimator Theory III: Power Line

4 credits, Not Offered Every Term

This course covers electrical laws, work safety habits and electrical apparatus for power line work. The focus on safe working loads, street lighting circuits, connectors, conductors and ways to protect lines from abnormal voltage. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-123UL Outside Electrical Fundamental Theory III

5 credits, Spring

Instruct the second year apprentice on cable applications, steps to restoring service, identification and care of hot line tools, lifting and digging operations with a mobile crane, traffic signal industry overview and basics of street lighting maintenance. Required: Student Petition.

Prerequisites: APR-122UL

APR-123UM Metering: Fundamentals III

5 credits, Spring

This course is designed to instruct second-year apprentices on the fundamentals of power calculations based on mathematical and planar approaches. Required: Student Petition.

Prerequisites: APR-122UM

APR-123UW Fundamental Substation Wireman III

5 credits, Spring

Fundamental Substation Wireman III students will develop a journey level understanding of cable splicing, fiber optic cables and power transformer maintenance while beginning detailed studies of other major substation equipment. This course is part of the NJATC substation curriculum.

Required: Student Petition.

Prerequisites: APR-122UW

APR-127PB Plumbing Fittings & Materials

3 credits, Not Offered Every Term

Methods of identifying and joining plastic, copper, cast iron, steel, glass and other piping materials as well as piping connections and plumbing code.

Required: Acceptance into Plumbers Apprenticeship program

APR-128UL Transformer Connections II

2 credits, Not Offered Every Term

Instruct apprentices or journey-level workers on the fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.

Required: Student Petition.

Prerequisites: APR-118UL

APR-129PT Basic Surface & Preparation

2 credits, Not Offered Every Term

This course continues with additional painting equipment, identifying types of surfaces, hand and mechanical cleaning of surfaces, protecting adjacent surfaces and improving surfaces to be painted. Required: Student Petition.

Prerequisites: APR-119PT

APR-130LM Basic Electricity I

3 credits, Fall

Explores fundamentals of AC and DC electricity. Includes: atomic structure, direct current, alternating current, Ohm's law, series, parallel, and combination circuits, DC circuit theorems, production of DC voltages, magnetic principles, transformers, motors and generators.

APR-131LM Basic Electricity II

3 credits, Winter

Covers application of several theories learned in previous term. Additional topics will include: motors, controls, alignment, pulleys and gears, troubleshooting theory, power distribution and lighting, electrical wiring and schematics.

Recommended Prerequisites: APR-130LM

APR-131UE Electric Utility System Operation (EUSO)

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on understanding electrical utility operations and maintenance of the power grid.

Required: Acceptance into Line Estimator Apprenticeship program

APR-132LM Basic Electricity III

3 credits, Spring

This course offers continued study in the control of industrial electric motors. Concepts in the application of relays, motor starters, switches and overload protection are explored from both a practical and theoretical viewpoint. Wiring techniques and electrical devices for residential, commercial and industrial facilities are presented along with hands-on activities. Additional topics include: electrical conductors, installation materials, and the scope of work performed by licensed electricians.

Recommended Prerequisites: MFG-130 and MFG-131

APR-132UE Estimator Navigational Mapping

3 credits, Not Offered Every Term

Principles and concepts that govern field operations. Explain and summarize the basics of electric utility energy systems. Focus is on computer applications used to manage service to customers. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-133UE Estimator Facility Point Inspection

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on permits, regulation, contracts, facility point inspections and what comprises the estimator's tool box. Required: Acceptance into Line Estimator Apprenticeship program

APR-134UE Estimator Phase Design

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on single and three phase construction projects. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-135UE Estimator Metering

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on theory, tools, motors and controllers, the grid, and computer applications.

Required: Acceptance into Line Estimator Apprenticeship program

APR-136UE Estimator Transformer Training

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on beginning to end site management for residential and commercial sites.

Required: Acceptance into Line Estimator Apprenticeship program

APR-137PB Plumbing Basic Installation & ISO

3 credits, Not Offered Every Term

Installation practices: plumbing fixtures, valves and fittings. Blueprint Reading: lines, scale rulers, sketching, symbols, detail sketching, orthographic projection, isometric & oblique sketches.

Required: Acceptance into Plumbers Apprenticeship program

APR-137UE Estimator Field Functions

3 credits, Not Offered Every Term

This course covers the principles and concepts that govern field operations. Students will explain and summarize the basics of electric utility energy systems. The focus is on estimator field responsibilities and equipment used in the field.

Required: Acceptance into Line Estimator Apprenticeship program

APR-138UL Transformer Connections III

2 credits, Not Offered Every Term

Instruct apprentices or journey-level workers on the fundamentals of transformer bank connections: delta-delta, wye-wye, wye-delta, open-delta, open-delta-wye and single-phase regulators and conditions that can cause backfeed. Transformer training is required to be taken each of the three years of a line apprenticeship in order to meet degree requirements.

Required: Student Petition.

Prerequisites: APR-128UL

APR-139PT Hand & Mechanical Cleaning

2 credits, Not Offered Every Term

Preparation of painting surfaces: identifying proper process for cleaning and preparation as well as the improvement of surfaces to be painted.

Required: Student Petition.

Prerequisites: APR-119PT

APR-147PB Plumbing Math

3 credits, Not Offered Every Term

This course will introduce students to basic math and specifically plumbing math as well as an in depth study of job-site safety. Required: Student Petition.

APR-149PT Basic Applications

2 credits, Not Offered Every Term

Covers brushing & rolling paints and conventional spraying techniques, as well as special devices, and troubleshooting techniques. Required: Student Petition.

Prerequisites: APR-139PT

APR-150ECE Introduction to Early Childhood Education & Family Studies

4 credits, Fall

Focuses on the history of early childhood education and the prominent theorists that have significantly contributed to the field. The types of programs that serve young children, birth-age 8, and their families will be examined. State and national standards in early childhood education and family studies will be explored.

APR-151IE Inside Electrical Intro to National Electrical Code (NEC)

6 credits, Fall/Winter/Spring

This course teaches how the National Electrical Code (NEC) NFPA 70 is arranged, covering its introduction, chapters, articles, parts, and sections. The student will learn to navigate and understand the relationship each part of the Code has to the other parts and will develop an in-depth comprehension of the verbiage and layout of the NEC to become adept at using the Code. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-102IE and APR-103IE

APR-152IE Inside Electrical Advanced Theory and Blueprints

6 credits, Fall/Winter/Spring

This course is designed to prepare students for the electrical general journey level examinations for the States of Oregon and Washington. The course is based on tests designed to challenge the student to navigate the National Electrical Code and Oregon and Washington rules and standards. This course presents the fundamentals of the use of construction drawings to determine methods and materials of construction. Emphasis is placed on architectural symbols and use of scale to determine location and placement. Required: Student Petition. Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-102IE and APR-103IE

APR-154ECE Language & Literacy Development in Young Children

4 credits, Winter

Focuses on language and literacy development of children from birth-age 8. The research foundation and components of language and literacy development will be examined. Criteria for selecting quality children's literature will be explored. Practical strategies for promoting optimal development will be emphasized. Students will explore how to set create language and literacy-rich environments and experiences.

APR-157PB Plumbing Pipe Sizing & Advanced Math

3 credits, Not Offered Every Term

Learn water pipe sizing & materials, water treatment, sewage, drainage, stacks, distribution systems, cross-connection protection, hot water heater types and the related codes. Advance mathematical skills to include square roots, cube roots, offsets, area and volume calculations, and lead & oakum.

Required: Acceptance into Plumbers Apprenticeship program

APR-159PT Basic Covering & Problem Solving

2 credits, Not Offered Every Term

Covers more advanced brushing, rolling, spraying and application techniques, as well as wood finishing and failures and remedies related to substrates, surface preparation and application. Required: Student Petition.

Prerequisites: APR-149PT

APR-167PB Plumbing Welding and Print Reading

3 credits, Not Offered Every Term

Blueprint Reading: rough-in sheets, single line drawings, detail drawings and sections. Welding: Gas welding, cutting theory, soldering, brazing and cutting; flat and vertical weld and shielded metal-arc welding.

Required: Acceptance into Plumbers Apprenticeship program

APR-169PT Advanced Coating

2 credits, Not Offered Every Term

Covers color & sheen of paints, special coatings, including roof and floor coatings. Required: Student Petition.

Required: Acceptance into Painters Apprenticeship program

Prerequisites: APR-159PT

APR-177PB Plumbing Related Science

3 credits, Not Offered Every Term

Installation practices: venting materials, sizing, and hangers and sewage pumps and ejectors. Related science: water properties, pressure, hydraulics, and traps; air, manometers, pressure testing and air chambers. Rigging & hoisting: safety, concepts, knots & hitches, hoists & pulleys, ladders & scaffolds, and hand signals. Required: Student Petition.

Required: Acceptance into Plumbers Apprenticeship program

Prerequisites: APR-167PB

APR-187PB Plumbing Related Codes

3 credits, Not Offered Every Term

Building Code and Mechanical Code requirements that affect plumbing installations including a review of Fire and Life-Safety Codes relative to plumbing installation. Required: Student Petition.

Required: Acceptance into Plumbers Apprenticeship program

APR-197PB Plumbing Backflow Prevention

1 credits, Not Offered Every Term

All facets of backflow prevention and protection related to Codes and Laws. Includes clean water requirements, recognizing dangerous cross connections between potable and non-potable water systems, as well as a lab in which to demonstrate and provide hands-on opportunity for proper use of backflow devices, installation and repair and testing.

Required: Student Petition.

Prerequisites: APR-137PB

APR-201IE Inside Electrical Grounding, Bonding, and Motors

6 credits, Fall/Winter/Spring

This course discusses what grounding is and its proper terms. It also discusses why effective grounding is needed and how effective grounding can be made a part of the electrical system. Also covers AC and DC motors, as well as calculations involving motors. Practical use of the National Electrical Code (NEC) will be introduced. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-151IE and APR-152IE

APR-201MA CNC I: Set-Up and Operation

4 credits, Not Offered Every Term

This is the first course in the CNC sequence. Students will learn basic skills including how to properly set-up and operate both CNC milling and turning centers. Students will also learn G & M codes related to basic machine set-up and operation. Designed for persons with little or no previous CNC experience.

APR-202IE Inside Electrical Controls and Automation

6 credits, Fall/Winter/Spring

This course builds on concepts learned previously covering writing ladder diagrams and designing complex motor controls incorporating proper National Electrical Code (NEC) requirements pertaining to wire size, disconnect size, overcurrent devices, and overall infrastructure related to electrical aspects of motor installation. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-151IE and APR-152IE

APR-202LM Electrical Code Level I

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC).

Assists LME apprentices in preparing for the state electrical exam.

Topics include definitions, requirements for electrical installations, identification and use of electrical conductors, wiring, circuit-protection, wiring methods, materials, and electrical safety standards.

APR-202MA CNC II: Programming and Operation

4 credits, Not Offered Every Term

This is the second course in the CNC sequence. Students will learn G&M-code programming for milling and turning while they build their set-up and operation skills. There will also be an introduction to set-up probing, 4-axis mill programming and machining, sub-programming and process documentation.

Prerequisites: APR-111MA, APR-201MA, MTH-050

APR-203LM Electrical Code-Level II

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC).

Topics include installation code requirements for the following: electrical equipment for general use such as motors, luminaries, air conditioners, cords, switchboards and panel boards. Also covers special occupancies which will assist students in locating and understanding electrical code requirements for hazardous locations such as gas stations, spray paint booths, aircraft hangars, health care facilities, places of assembly, theaters, manufactured buildings, mobile homes, temporary locations, etc. Electrical standards will be emphasized.

APR-203MA CNC III: Applied Programming and Operation

4 credits, Not Offered Every Term

This is the third course in the CNC sequence. Students will build their CNC programming, set-up, and operation skills. They will work individually or in small groups to design, program, manufacture, and test advanced projects using CNC mills, CNC lathes, multi-axis/process machine tools, and various software applications.

Prerequisites: APR-202MA and MTH-080

APR-204LM Electrical Code-Level III

4 credits, Not Offered Every Term

Provides a working knowledge of the National Electrical Code (NEC). Assists LME apprentices in preparing for the state electrical exam. Topics include special equipment, special conditions, and communications systems. Covers State of Oregon statutes and amendments, building code division rules, license requirements and responsibilities, supplemental code reference materials, safety standards and practice exams.

APR-205PB Service Plumbing

3 credits, Not Offered Every Term

Course will teach the plumbing apprentice basic skills required to service and repair a plumbing system. The apprentice will have an opportunity to learn methods used by a plumber to trouble shoot a plumbing system and restore it to working order. Required: Student Petition.

Prerequisites: APR-177PB

APR-207PB Municipal Systems

2 credits, Fall/Winter/Spring

This course introduces the student to the different municipal systems that deliver water to, and dispose of water and waste from the private plumbing systems in use today. Course content includes potable water sources, public delivery methods including gravity and pressure. In addition, wastewater collection including grease and hazardous effluent, stormwater conveyance, and disposal, as well as administration, regulation and management of public utilities are covered.

Recommended: Student must be a currently registered Plumbing Apprentice with Area I, Joint Apprenticeship Training Committee

APR-209PB Plumbing Technology Applications

3 credits, Not Offered Every Term

This course will teach the plumbing apprentice basic skills required to understand and use selected technological applications utilized in the plumbing industry. Students will work with plumbing industry websites, software applications, mobile electronic devices and other electronic tools that will enable them to use electronic technology as it applies to plumbing installations. Students will be introduced to the broad range of plumbing software programs and methods that use online technology to communicate code requirements. Students will learn to correctly use search engines in order to find information related to plumbing. Students will learn how to develop skills using software to estimate, bid, schedule, plan, and manage plumbing projects and jobs.

Prerequisites: APR-137PB and APR-177PB

APR-216ED Foundations of Teaching & Education

4 credits, Fall/Winter/Spring

Provides an overview of the educational system in the U.S. including historical, legal, and philosophical foundations of education. Explores the financing, governance and organization of education as well as current issues impacting our educational system. Provides an overview of diversity in educational settings and the characteristics and ethical obligations of effective schools and professional educators. Examines career options and pathways in the field of education.

APR-217LE Integrated Systems

4 credits, Not Offered Every Term

Covers the equipment used in CCTV systems, as well as the methods used to integrate these components into systems that meet the surveillance needs of different users. The course work will cover basic system components as well as specific application criteria and terminology. The student will also achieve a working knowledge of the National Electrical Code (NEC) as it applies to these technologies. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-217PB Advanced Plumbing Installation

3 credits, Not Offered Every Term

Plumbing theory and association skills and knowledge related to residential, commercial and industrial installation of appliances, fixture fittings and trim, gas code, piping, controls and regulators, as well as mathematics relative to elevations, leveling and transit. Required: Student Petition.

Prerequisites: APR-177PB

APR-218LE Fire Alarm Systems

4 credits, Not Offered Every Term

This course covers the basics of Fire Alarm systems for the Limited Energy License A and B. The class will cover the basics of National Fire Protection Association (NFPA) 72 and National Electrical Codes (NEC) 760. It will cover the different styles of circuits, wiring and devices and their components. Students will also learn system drawing and math. Required: Student Petition.

Required: Acceptance into Limited Energy Apprenticeship program

APR-219LE ADA & Code

4 credits, Not Offered Every Term

Covers review of math dealing with Ohm's Law, Kershov's Law, trigonometry, voltage drop calculations and how to calculate horsepower to amperage depending on what type of electricity is being used. Also included are the newest changes in the National Electrical Code (NEC), basic Americans with Disabilities (ADA) requirements and test preparation for the Journey Level Limited Energy exam. Required: Student Petition. Required: Acceptance into Limited Energy Apprenticeship program

APR-219PT Advanced Graphics & Texturing

2 credits, Not Offered Every Term

Covers advanced techniques in graphics, glazing, antiquing, stippling, mottling, texturing and stenciling. Required: Student Petition.

Prerequisites: APR-169PT

APR-223LM Instrumentation & Controls

3 credits, Winter

Course instruction covers areas of process measurement, control and data acquisition. Common sensors and actuators and their applications are also presented.

Recommended Prerequisites: APR-130LM

APR-225ECE Prenatal, Infant & Toddler Development

3 credits, Winter

Explores the principles of child development, prenatal through three years of age. Emphasis will be placed on the physical, cognitive, and social-emotional development of young children. The impact of family dynamics, culture and socio-economic status on children's development will be explored.

APR-227PB Plumbing Gas Venting & Drains

3 credits, Not Offered Every Term

Introduces apprentices to the basic venting of gas appliances, mathematics to calculate offsets for plumbing systems, and cylindrical & rectangular tanks; storm drain systems and isometric drawings. Required: Student Petition.

Prerequisites: APR-217PB

APR-229PT Advanced Techniques

2 credits, Not Offered Every Term

Continues with various paint texturing techniques: marbleizing, gilding, graining, lining and striping, as well as trade math & measuring, job planning and blueprint reading. Required: Student Petition.

Prerequisites: APR-219PT

APR-231UE Line Estimator Responsibility I: Live Line

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to line maintenance. The focus is on ground resistance, pole replacement and live line maintenance, fiber optic types, and codes and standards for installation procedures. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-231UL Outside Electrical Advanced Theory I

5 credits, Fall

Instruct third year, first term apprentices on outside electrical apprenticeship training as it applies to distribution circuits and capacitors, inductance, AC theory, transformers single and three phase voltages and connections, troubleshooting and testing, personal protective grounding, National Electric Safety Code (NESC) standards, and safe work practices. Required: Student Petition.

Required: Second-year outside electrical theory

APR-231UM Metering: Advanced I

5 credits, Fall

This course will instruct third-year apprentices on the subject of advanced metering including the following: history of metering (past, present, and future), review of meter vectoring, polyphase vectoring, self-contained meters, instrument rated meters, instrument transformers (current and voltage) and their application. Required: Student Petition.

Prerequisites: APR-123UM

APR-231UW Advanced Substation Wireman I

5 credits, Fall

Advanced Substation Wireman I students will learn about local union by-laws, worker benefits, and labor management relations and their responsibilities as a journey-level worker. Also non-standard equipment such as static volt-ampere reactive (VAR) compensators, gas insulation stations. Additional topics include System Control and Data Acquisition (SCADA), and alternative energy sources. This course is part of the NJATC substation curriculum. Required: Student Petition.

Prerequisites: APR-123UW

APR-232UE Line Estimator Responsibility II: Substation

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to substation line maintenance. The focus is on voltage regulation, circuit protection, high voltage fuses, air break switches, transformers, and related safety issues and procedures. Required: Student Petition.

Required: Acceptance into Line Estimator Apprenticeship program

APR-232UL Outside Electrical Advanced Theory II

5 credits, Winter

Instruct third year, second term apprentices on outside electrical apprenticeship training as it applies to distribution capacitors, capacitor switching, breakers and switches, rubber protective devices, live-line tools, live-line work practices, primary and single-phase revenue metering, substation safety procedures, substation construction and advanced math applications. Required: Student Petition.

Required: Second-year outside electrical theory

Prerequisites: APR-231UL

APR-232UM Metering: Advanced II

5 credits, Winter

Designed to instruct third-year apprentices on the subject of advanced fundamentals of metering including the following: rates and tariffs, demand metering, Kilovolt-Ampere-Reactance (KVAR) and Kilovolt Amps (KVA) metering, special metering (compensation metering, bidirectional flow (net metering), and totalization, pulse metering (pulse weights, pulse initiation, and totalization). Required: Student Petition.

Prerequisites: APR-231UM

APR-232UW Advanced Circuit Theory & Troubleshooting I

5 credits, Winter

This course is designed to instruct third year wireman students on the advanced theory and application of outside electrical substation related training as it applies to a working understanding of algebra, electron theory and all aspects of AC & DC electric circuit evaluation, reading substation construction prints, National Electric Code (NEC) codes for construction and safe work practices. Required: Student Petition.

Prerequisites: APR-231UW

APR-233UE Line Estimator Responsibility III: Field Responsibility

4 credits, Not Offered Every Term

This course covers the principles and concepts that govern field responsibilities related to line maintenance. The focus is on hot stick procedures, installing substation control equipment, locating cable faults, power factor, harmonics and functions of control equipment.

Required: Acceptance into Line Estimator Apprenticeship program

APR-233UL Outside Electrical Advanced Theory III

5 credits, Spring

Instruct third year, third term apprentices on outside electrical apprenticeship training as it applies to primary fusing and fuse principles, reclosers and sectionalizers, substation equipment, line fault current and voltage regulation, capacitors, power factor/harmonics, fiber optics including: fiber type, cable type, codes and standards, aerial construction, and underground construction, alternative energy sources and journeymen responsibilities. Required: Student Petition.

Required: Second-year outside electrical theory

Prerequisites: APR-232UL

APR-233UM Metering: Advanced III

5 credits, Spring

This course is designed to instruct third-year apprentices on the subject of advanced fundamentals of metering including the following: meter software programs (error codes, service test editing, interpretation of instrumentation vectors, interval data, and programming), meter communications, general system troubleshooting, power quality and harmonics, Automated Meter Infrastructure (AMI)/Automated Meter Reading (AMR) and the Smart Grid. Required: Student Petition.

Prerequisites: APR-232UM

APR-233UW Advanced Circuit Theory & Troubleshooting II

5 credits, Spring

This course is designed to instruct third-year wireman students on the advanced theory and application of outside electrical substation related training as it applies to a working understanding of algebra, electron theory and all aspects of AC & DC electric circuit evaluation, reading substation construction prints, National Electric Code (NEC) codes for construction and safe work practices. Required: Student Petition.

Prerequisites: APR-232UW

APR-235ECE Safety, Health and Nutrition

3 credits, Fall

Explores safety, health and nutrition issues for children ages infant through preschool. Focus includes creating safe indoor and outdoor environments, healthy lifestyle practices, caring for children with special healthcare needs, USDA food program requirements, and state guidelines around safety, health and nutrition requirements.

APR-237PB Plumbing Water Heater & Circuit Controls

3 credits, Not Offered Every Term

Plumbing concepts relative to energy, temperature, and heat transfer via conduction, convection, and radiation in gas, oil, electric and solar water heaters. Included are water treatment, basic motors & controls, circuit protection, and troubleshooting. Blueprint reading segment covers specifications, floor, site, structural, plumbing, electrical and HVAC plans. Required: Student Petition.

Prerequisites: APR-227PB

APR-239PT Advanced Estimating & Codes

2 credits, Not Offered Every Term

This course covers surface preparation, materials, adhesives and installation of wall covering, as well as potential failures and remedies during the wallcovering process. Also included are wallcovering math & measurement, as well as job planning techniques. Required: Student Petition.

Prerequisites: APR-229PT

APR-240ECE Environments and Curriculum Planning

4 credits, Spring

Focuses on an introduction of creating learning environments and curriculum for children from three years old through five years old in home or center-based programs. Course covers theories and relationships between physical and social space, activities, experiences, and materials. Students are introduced to the use of developmentally and culturally appropriate practices in planning and selecting environments and curriculum for young children.

APR-247ECE Preschool Through Adolescent Child Development

3 credits, Spring

This course focuses on principles of development in children three years old through adolescence, including physical, cognitive, language, and social and emotional growth. Explores major historical theories of child development and current research and practices. A focus on how culture, family dynamics, and socio-economic status impact growth and development are included.

Prerequisites: APR-225ECE

APR-247PB Advanced Plumbing Code I

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It introduces the Uniform Plumbing Code and covers additional plumbing laws and rules. The student will work with the plumbing code book to learn definitions and general regulations, acceptable methods and materials for plumbing installations and will prepare for the State plumbing examination. Required: Student Petition. Required: Successful completion of 1st, 2nd, and 3rd years of Plumbing related training

APR-250IE Inside Electrical NEC Code Analysis I

6 credits, Fall/Winter/Spring

This course is designed to prepare students for the electrical general journey level examinations for the States of Oregon and Washington. The course is based on tests designed to challenge the student to navigate the National Electrical Code (NEC) and Oregon and Washington rules and standards. Each test is designed to simulate the three-hour, 52 question general journey level tests. This course is one of four with the same design and theme which each have a unique set of tests to enhance the students' knowledge. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-201IE and APR-202IE

APR-251IE Inside Electrical NEC Code Analysis II

6 credits, Fall/Winter/Spring

This course takes an in-depth look at Chapters 1-9 of the National Electrical Code (NEC) NFPA 70 and incorporates Oregon and Washington rules and statutes. This course is designed to prepare students for the Oregon Inside Electrical Journey-Level exam. Required: Student Petition. Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-201IE and APR-202IE

APR-254MA Mill/Turn Machining

3 credits, Not Offered Every Term

This class will introduce students to CNC mill-turn machines, their programming, and setup procedures. The course will explore limitations, advantages, and configurations of typical mill/turn machines including rotation style and set-up orientation. Post processing and virtual machine simulation will also be discussed.

Prerequisites: APR-203MA

APR-257PB Advanced Plumbing Code II

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is a continuation of Advanced Plumbing Code I, and covers additional plumbing codes, analysis of definitions, plumbing theory and design, and vents, traps, and storm drain systems. Medical Gas installation will be reviewed. Required: Student Petition.

Prerequisites: APR-247PB

APR-258ED Culturally Responsive Teaching & Education

3 credits, Spring

Explores historical and systemic inequities in U.S. society and how they impact students, schools, and communities. Provides an overview of the ways in which educators can select culturally appropriate pedagogy, materials, and curriculum in order to serve the needs of an increasingly diverse U.S. educational system. Applies this knowledge in creating classrooms and schools where all students, families, and communities are valued, belong, and thrive.

APR-267PB Advanced Plumbing Code III

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is a continuation of Advanced Plumbing Code II, and covers additional plumbing codes, analysis of definitions, plumbing theory and design, advanced preparation for the State Journeyman Plumber's Exam, and overview of the entire code book. Required: Student Petition.

Prerequisites: APR-257PB

APR-276PB Plumbing Review I

3 credits, Not Offered Every Term

This course is designed to prepare the apprentice for the plumbing journeyman exam. It is the first of three Advanced Plumbing Code classes and covers additional plumbing codes, analysis of definitions, plumbing theory and design, advanced preparation for the State Journeyman's Plumbers exam and overview of the entire code book. Required: Student Petition.

Required: Successful completion of 1st, 2nd, and 3rd years of Plumbing related training

APR-277PB Plumbing Review II

3 credits, Not Offered Every Term

This course is the second of three classes designed to provide the fourth year apprentice with a computer-assisted overview of previous courses and an opportunity to explore advanced plumbing topics. Required: Student Petition.

Prerequisites: APR-267PB

APR-287PB Plumbing Review III

3 credits, Not Offered Every Term

This course is the last of three classes designed to provide the fourth year apprentice with a computer-assisted overview of previous courses and an opportunity to explore advanced plumbing topics. Required: Student Petition.

Prerequisites: APR-277PB

APR-295IE Inside Electrical Exam Preparation I

3 credits, Fall

This course is designed to prepare students for the electrical general journey level examinations for the States of Oregon and Washington. This course is designed to support those students who have completed the courses required for their four-year apprenticeship, but are not yet eligible for the general journey exam. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-250IE and APR-251IE

APR-296IE Inside Electrical Exam Preparation II

3 credits, Spring

This course is designed to prepare students for the electrical general journey level examinations for the States of Oregon and Washington. This course is designed to support those students who have completed the courses required for their four-year apprenticeship, but are not yet eligible for the general journey exam. Required: Student Petition.

Required: Must be an apprentice registered with Area 1 Inside Electrical JATC

Prerequisites: APR-250IE and APR-251IE