

# NYS & CSEA Partnership

## Core Courses

All participants in the ASTP are required to complete the refresher and core courses described below. These courses have been designed to provide the foundational skills necessary to succeed in the specialized trade courses.

### Required Core Courses

**Math Fundamentals (15 hours)** - This course introduces participants to the fundamental mathematical functions of addition, subtraction, multiplication, and division of whole numbers. It will also introduce concepts involving whole numbers, with heavy emphasis placed on elementary fractions, decimals, and percents. The course will help prepare participants for the Technical Math core course (see below).

**Technical Math (45 hours)** - This course provides a thorough review of the math principles needed for participants to successfully complete the trade theory instruction required for technical occupations. It focuses on the use of whole numbers, fractions, decimals, and percents to solve practical word problems as they relate to various trades. The course progresses to using and interpreting graphs, as well as applying the concepts of plane and solid geometry, algebra, and trigonometry to solving practical word problems.

**Blueprint Reading Fundamentals (15 hours)** - This course gives participants the fundamental skills necessary to read and interpret blueprints and schematic drawings. Participants will use an architectural ruler to read scaled drawings, convert designs into a blueprint, comprehend basic abbreviations, symbols, and line types within a blueprint, and interpret different types of drawings (for example, architectural, electrical, plumbing, or landscaping).

**Workplace Communications (45 hours)** - This course provides a practical introduction to effective oral and written communication for employees working in trade occupations. The two-way nature of communication, including verbal and non-verbal expression, will be addressed. Techniques for successfully communicating with and relating to others in the workplace are an essential ingredient of the course. Emphasis will be placed on basic writing skills, including principles of grammar and sentence structure in preparing memos, letters, and simple reports.



## Carpenter - Trade Courses

**Carpentry 1: Tools and Materials (72 hours)** - This course introduces the theory and practice of carpentry, with a focus on tools and materials. Topics include wood products; engineered wood products; fasteners; hand tools; stationary power tools; scaffolding and worksite safety; material calculations; and basic building codes.

**Carpentry 2: Light Framing (72 hours)** - This course covers the theory and practice of carpentry, with a focus on residential light frame construction. Topics include print reading; safety factors; material calculations; floor framing systems; wall framing; ceiling framing; roof framing; roof sheathing; roof finishes; window installation; and exterior door installation.

**Carpentry 3: Interior (72 hours)** - This course covers the theory and practice of carpentry with a focus on interior finish and trim. Topics include partition layout; insulation and ventilation; drywall installation; wall paneling and wall tile; suspended ceilings; interior door installation; interior trim; stair framing and finishing; and cabinets and countertops.

**Carpentry 4: Special Projects (72 hours)** - This course applies and builds upon skills learned in the three previous carpentry courses. Topics and projects include project planning; changing interior partitions; changing closets and shelves; institutional furniture repair; table tops and laminates; installing wall products; storage buildings and shed roofs; outdoor benches and tables; and porches and steps.

**NOTE:** Each course listed above is expected to be completed over a 12-week period (6 hours per week). Course instruction is supplemented with hands-on activities that support the concepts learned in the classroom.



## Electrician - Trade Courses

**Electricity 1: Direct Current Electricity (72 hours)** - This course introduces the basic concepts of direct current electricity. Topics include how electricity works; measuring electrical quantities; reading electrical prints; resistance and conductivity; Ohm's Law; series and parallel circuits; combination circuits; switches; batteries; capacitors; and inductors.

**Electricity 2: Alternating Current Electricity (72 hours)** - This course covers the basic concepts of alternating current electricity. Topics include the differences between DC and AC circuits; the AC sine wave; using vectors to solve AC problems; calculating impedance in circuits having inductance, capacitance, and resistance; AC power relationships in single-phase and three-phase circuits; and principles of transformer operation and maintenance.

**Electricity 3: Electrical Installation (72 hours)** - This course provides participants with the principles and practices of installing electrical circuits in commercial buildings. Topics include electrical safety and codes; print reading; load computation and layout; branch circuit installation; switches and receptacles; motor and appliance circuits; feeder circuits, panel boards, and lighting circuits; and the electrical service entrance.

**Electricity 4: Electrical Systems and Motors (72 hours)** - This course covers the design, installation, troubleshooting, and repair of electric motors. Topics include motors and print reading; split phase motors; capacitor motors; repulsion motors; universal and special motors; synchros and servos; motor installation and maintenance; motor starters, switches, and controls; and motor relays.

**NOTE:** Each course listed above is expected to be completed over a 12-week period (6 hours per week). Course instruction is supplemented with hands-on activities that support the concepts learned in the classroom.



## Mason and Plasterer - Trade Courses

**Masonry 1: Concrete Flat Work (72 hours)** - This course introduces the theory and practice of creating and maintaining horizontal concrete structures such as walks and slabs. Topics include concrete measurements and calculations; safety factors; properties of concrete; foundation design; concrete forms; concrete placement; and concrete finishing and curing.

**Masonry 2: Block Work (72 hours)** - This course provides the theory and practice of maintaining block walls using concrete (cement) blocks and bricks. Topics include block measures and calculations; print reading; safety factors; block wall construction; block wall repair and maintenance; bricklaying; and brick wall maintenance and repair.

**Masonry 3: Tile and Gypsum Products (72 hours)** - This course covers the theory and practice of maintaining and repairing structures such as tile floors and walls, drywall and plaster walls, and ceilings. Topics include product measures and calculations; safety issues; and the installation, maintenance, and repair of ceramic tile, soft tile, marble, terrazzo, cultured stone, drywall, lath, and plaster.

**Masonry 4: Special Projects (72 hours)** - This course covers the theory and practice of maintaining special masonry structures such as pavers and stone walkways, retaining walls, brick and stone veneer walls, and glass block walls. Also included are topics in material measurements and job estimates, and safety issues related to the job site.

**NOTE:** Each course listed above is expected to be completed over a 12-week period (6 hours per week). Course instruction is supplemented with hands-on activities that support the concepts learned in the classroom.



## Plumber and Steamfitter - Trade Courses

**Plumbing Systems 1: Waste, Vent, and Drain (72 hours)** - This course introduces the installation and maintenance of piping systems in office buildings. Topics include sanitary drainage and venting; storm drainage piping; plastic pipe and fittings; cast soil pipe; the plumbing trap; testing drainage systems; and installation measurements and calculations.

**Plumbing Systems 2: Water Supply (72 hours)** - This course focuses on the installation and maintenance of piping systems in office buildings. Topics include copper pipe and fittings; sizing water supply piping; testing water supply piping; fixtures; valves; faucets; water heaters; pressure boosters; re-circulating systems; fixture and appliance repair; water testing; and print reading and calculations.

**Plumbing Systems 3: Installation (72 hours)** - This course covers the installation and maintenance of piping systems in office, residential, or other non-manufacturing-type buildings. The special focus of the course is on the piping system, as opposed to individual fixtures and components. Classroom instruction is devoted to system design and system troubleshooting, along with sessions devoted to estimating and to plumbing codes.

**Plumbing Systems 4: Pipefitting and Welding (72 hours)** - This course demonstrates the techniques used to permanently join pipes used in plumbing and related systems. Also included are units on basic welding skills as they apply to pipefitting. Topics include oxy-acetylene cutting; pipe threading and joining; arc and shielded metal arc welding (SMAW); SMAW groove welds; SMAW open v-groove welds; SMAW open root pipe welds; joint fit-up and alignment; and welding safety.

**NOTE:** Each course listed above is expected to be completed over a 12-week period (6 hours per week). Course instruction is supplemented with hands-on activities that support the concepts learned in the classroom.