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651.779.3341

century.edu/continuinged

Continuing Education & Customized Training

Industry
Related
Distance
Learning



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General Information

Welcome to the Century College Industry Related Distance Learning correspondence programs and courses. With these courses you will learn at your own pace, in an environment that is comfortable to you. These courses are applicable to both State and Federal approved apprenticeship programs.

Frequently Asked Questions

How does a correspondence course work?

1. After we receive your registration we will send the course books and materials to you via UPS.
2. Each course is self-paced and self instructional. The learning packets contain directions and step-by-step procedures as well as a number of unit tests which you may take on an open-book basis.
3. Upon completion of one or more of your unit tests, you will send them to Century College for scoring using the envelopes provided for you. Century will correct the test sheets and return your test score(s) to you. If you fail a unit test, you will be given a second chance to pass the test.
4. Upon successful completion of your course, you will receive a signed Certificate of Completion from Century College.

What is an Apprenticeship Program?

An apprenticeship program is an opportunity to learn a skilled profession while you earn a wage. Registered apprenticeship training requires a combination of on the job training hours and occupational-related hours of instruction. At Century College, we provide you with the occupational-related hours of instruction through our Industry Related Distance Learning coursework. According to the Federal and State of MN Department of Labor and Industry, apprenticeship training can range from one to five years in length requiring 144 hours of related instruction each year of training.

For more information on Apprenticeship Programs call the Minnesota Department of Labor and Industry at 651-284-5090 or toll free at 1-800-657-3607.

Do you have to be a Registered Apprentice to take any of these courses?

No. Anyone may take any of the courses in this catalog.

How do I register?

Complete the Registration Form on page 23 and select your payment method. Then get your information to us in one of the following three ways:

1. By Mail: Complete the registration form and provide credit card information, business purchase order or a separate check for the exact amount. Please keep copies for your records. Mail to:
Century College
CECT/Distance Learning
3300 Century Ave. North
White Bear Lake MN 55110
2. By Fax: Dial our fax number, 651-779-5802. Send the completed registration form with credit card information or your business purchase order.
3. By Phone: Call 651-779-5775 or 1-800-832-4916. You will be asked to provide the registration form information from the last page in this catalog. We can accept credit card payment (Visa, MasterCard or Discover) only by phone.

What about the Certificates?

Participants who successfully complete all work in an Industry Related Distance Learning course will receive a Certificate of Completion, honoring their achievement and documenting the hours completed. This information will also be stored in the State of Minnesota college records system in transcript form and will be available to you at any time you request it (for a fee).

How long has Century College been doing this type of training?

For over 20 years, Century College has worked closely with industry to provide distance learning opportunities that prepare employees for the challenges of daily working environments. We provide training options for union and non-union employers who have apprentices. Individuals may also enroll in any of these courses for personal or professional growth, not related to apprenticeships.

Do you have a mission statement?

Yes, our mission is to be the preferred provider of customer-focused educational courses, programs, and services which:

- Enhance workforce skills
- Promote personal professional and intellectual growth
- Benefit the economic and social development of our diverse community

Pricing

Please see the colored insert for current pricing information on these courses. For additional copies, call 651-779-5782.

Please note: Prices subject to change without notice as costs for registration, instruction, books and materials may increase.

Direct 651-779-5782
Toll Free 1-800-832-4916
Fax 651-779-5802



Questions? Email the program coordinator at michael.gallagher@century.edu or call **651-779-5782**.

General/ Miscellaneous Courses

■ **Basic Technical Math (1520)** *72 hours*

A review of the fundamental math you probably learned in high school. Whole numbers, fractions, decimals, percents and graphs will be covered. In addition, basic measurements, ratios, and various types of equations are addressed.

■ **Psychology for Life & Work (1707)** *72 hours*

In order to succeed in your personal and work life, you must understand the world around you and those who live in it. You must know what motivates you and how your decisions and actions are influenced by things like your attitude and values. This course will help you identify some of the reasons why people including you, behave the way they do.

■ **Basic Metrics (602)** *24 hours*

This course will help you with metric conversions. Lengths, areas, volumes, capacities, weights and temperatures will be covered. The history of Metrication and some of the problems associated with conversions will be discussed.

■ **Quality 101 (0101)** *36 hours*

This course is delivered in association with ASQ, (The American Society for Quality). There are six major topic areas: quality benefits; the evolution of quality; total quality management; process management; quality tools; and quality deployment. Upon completion, certificates from ASQ and Century College are available.

■ **Understanding Digital Prepress (1415)** *144 hours*

This course explains the stages of what happens after an image is created on the computer. The subjects that are covered include: color separations, color spaces, calibration, color correction, resolution, output programs, font issues, trapping, compact files, preflighting, proofing methods, and considerations for printing. When you complete the course, you will be able to apply the theories learned, to produce high quality printing output in a print production environment.





Professional Chef Training

There are four courses in this series; the same textbook is used for all four courses. Each course is 72 hours. Topics covered in each of the courses are listed below.

■ Professional Chef, Level 1 (310)

- Skill 1 Explain fundamental aspects of the culinary profession
- Skill 2 Describe world cuisines
- Skill 3 Identify equipment, meats and fish
- Skill 4 Identify fruit, dairy, eggs and dry goods

■ Professional Chef, Level 2 (311)

- Skill 1 Describe flavor and texture in soups and stocks
- Skill 2 Produce sauces and soups
- Skill 3 Describe fabrication, grilling, broiling, roasting and baking
- Skill 4 Describe sautéing, frying, steaming, braising and stewing

■ Professional Chef, Level 3 (312)

- Skill 1 Explain cooking vegetables and potatoes
- Skill 2 Describe cooking grains, legumes, pasta and dumplings
- Skill 3 Cook eggs, dressings and salads
- Skill 4 Produce sandwiches, hors d' Oeuvre, appetizers, charcuterie and garde manger

■ Professional Chef, Level 4 (313)

- Skill 1 Explain Baking Mise en Place and yeast breads
- Skill 2 Describe the preparation of pastry doughs and batters
- Skill 3 Produce custards, creams, mousses, fillings, frostings and dessert sauces
- Skill 4 Identify the fundamentals of cooking (final test)

Bricklaying

■ Bricklaying (501) *36 hours*

This course is an introduction to one of the oldest building trades. Contents include: the basics of masonry construction, tools, equipment and safety, masonry building units and

construction, basic and advanced brickwork, and concrete block masonry.



■ Plan Reading for Masons (502) *36 hours*

Learning to read blueprints and interpret an architect's symbols is emphasized. Topics include: Plan reading, dimension and scale, quantity estimation, masonry specification, fireplace design, and landscape architecture.

■ Masonry Math (503) *72 hours*

This course is especially useful for figuring out how much material is needed for a job. Skills covered in this course include: fractions, decimals, square measure, and cubic measure. Many practical problems are included.

■ Masonry Skills (505) *72 hours*

This course provides instruction on specialized equipment, tools, and techniques used by masons to mix mortar, bond materials in patterns, and lay out the construction of walls and buildings.

■ Masonry Estimating (506) *72 hours*

Before a masonry job begins, an estimate of materials and costs must be prepared. The outcome of this course is to give you the tools and skills to provide your customer with an accurate estimate of costs associated with the project.

■ Advanced Masonry Skills (507) *144 hours*

Ten advanced masonry topics will be covered: foundations, footings and waterproofing; chimneys and fireplaces; building outdoor structures; modular construction; glazed and prefaced masonry units; arches; stone masonry; alterations, repairs and maintenance; new trends and developments; and planning and managing the masonry job.

Building Maintenance

■ Industrial Safety & Health (1725) 72 hours

Topics covered in this course include: government involvement in workplace safety, personal protective equipment, fire safety, health hazards, ergonomics, environmental responsibility, and safety situations.



■ Cleaning Chemicals (1726) 72 hours

This course offers a thorough coverage of cleaning chemicals. Contents include: OSHA standards, chemical hazards, selecting of products, general purpose cleaners, strippers, degreasers, controlling microorganisms, bowl cleaners and drain cleaners.

■ Floors & Floor Care Equipment (1727) 72 hours

A complete discussion of hardwood floors, carpeted floors, care and maintenance, use and operation of various machines, such as: vacuums, power sweepers, floor sanders and pressure washers.

■ Maintaining Floors (1728) 72 hours

An in-depth look at floor surfaces and maintenance. This course will cover: calculation of floor areas; machine use; floor strippers, sealers and finishes; finishing safety; troubleshooting; warping and more.

■ Rest Room Care (1729) 72 hours

Everyone appreciates a clean restroom. Contents of this course include: rest room basics, routine restroom cleaning, cleaning plumbing fixtures, and restroom disinfection.

■ Carpet & Upholstery Care (1730) 72 hours

The focus of this course is carpet and upholstery care. Various topics are covered including: carpet variety, preventative maintenance, cleaning methods, stretching, bleeding, insect attack, and upholstery fabrics and care techniques.

Got questions?

Contact Mike Gallagher at **651-779-5782** or email **michael.gallagher@century.edu**

Carpentry

■ **Math for Carpenters (601)** *72 hours*

This course combines mathematical concepts with information on skills and techniques of carpentry. Mathematical principles include whole numbers, fractions, decimals, ratios and proportions, and the fundamentals of algebra, geometry and trigonometry.

■ **Carpentry 1 (603)** *72 hours*

This is part one of a two-part course. This part covers hand and power tools, fundamentals of construction equipment, safety, building designs and prints, survey basics, foundation and outdoor slab construction.

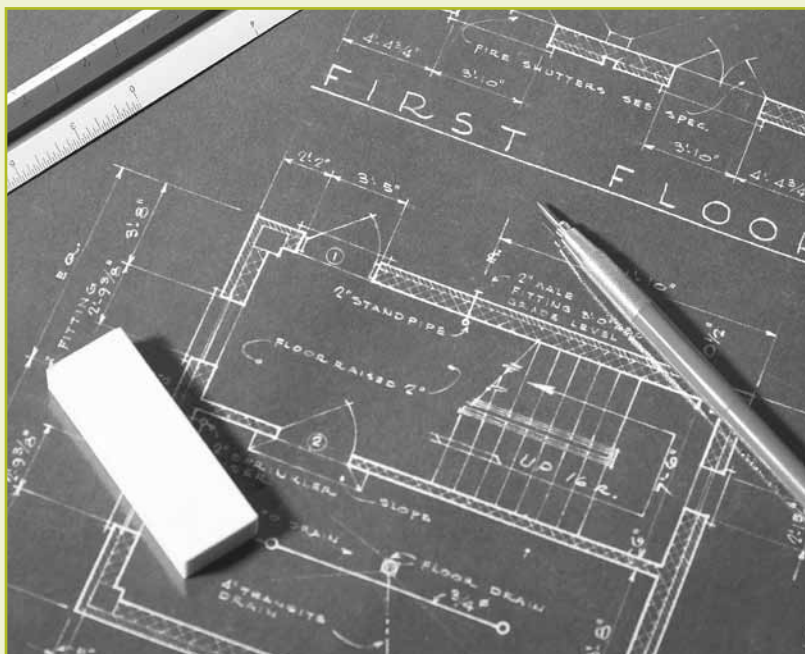
■ **Carpentry 2 (604)** *72 hours*

This is the second of a two-part course. Topics include: framing walls, floors and ceilings; metal framing; roofs; energy conservation in construction; finish work; stairways; post and beam construction; and heavy concrete construction.

■ **Building Trades Print Reading 1 (605)** *72 hours*

You must have a plan before building something. Topics revolve around residential construction blueprints and include working drawings, symbols and abbreviations, floor plans, elevation views, sectional views, detail views and trade information.





■ **Building Trades Print Reading 2 (612)** *72 hours*

Current materials and code standards are covered, as well as types of plans, specifications, abbreviations and symbols, trade coordination, and specific building materials. Separate prints are included for a residence, a bank, a commercial building and a restaurant.

■ **Estimating Home Building Costs (607)** *72 hours*

This course takes the contractor through each phase of estimating residential construction. A cost estimate worksheet at the end of each section lists every item in each area of construction and virtually eliminates the risk of omission.

■ **Psychology for Life & Work (1707)** *72 hours*

In order to succeed in your personal and work life, you must understand the world around you and those who live in it. You must know what motivates you and how your decisions and actions are influenced by things like your attitude and values. This course will help you identify some of the reasons why people, including you, behave the way they do.

■ **Cabinet Blueprint Reading (611)** *72 hours*

In this course you will find orthographic projections, drawing conversions of scale drawings, terminology and symbols, identification of construction and production techniques. Upon completion, you will be able to study an engineering view of a product and visualize the finished product.

■ **Cabinet Making & Millwork (606)** *72 hours*

This course covers the fundamentals of cabinet building, interior construction, and furniture building. Topics include: cabinet making; furniture designs; materials and layout; tools and machines; construction procedures; finishing; and industrial production.



Electrical Lineworker

■ **Fundamentals of Electricity Part I (701)** *72 hours*

Basic electrical concepts are the focus of this course. You will cover the very basics, such as electrical safety and atomic energy, then move on to Ohm's law, series and parallel circuits, AC and DC power, electric motors, various measurement tools, and finish with three phase three wire circuits.

■ **Fundamentals of Electricity Part 2 (706)** *72 hours*

This course covers DC generators, AC generators, polyphase circuits, three phase Wye connections, three phase delta connections, alternators, alternative power sources, and transformers, DC motors and controls, relays and timers, three-phase motors, three phase motor installations, energy efficient motors, repulsion motors, Selsyn units, and motor maintenance. Fundamentals of Electricity Part 1 should be completed before this course.

■ **Math for Electricians (702)** *72 hours*

This course has been designed to enable students to develop problem solving abilities using electrical terminology and applied examples. Math concepts covered include: whole numbers, fractions, decimals, percents, formulas, surface measurements and triangles.

■ **Transformers (704)** *72 hours*

Electrical and magnetic principles are covered, in addition to transformer construction, classification, circuitry and cooling, tap changers, transformer connections and special transformer maintenance.

■ **Industrial Fluid Power (1205)** *72 hours*

This is a broad overview of fluid power covering principles, major components, and basic circuitry. Contents include: fluid power cylinders, control valves, air and hydraulic pumps, design calculations, troubleshooting procedures, and fluid power data.

■ **Electrical Construction Wiring (805)** *72 hours*

An introduction to electrical codes and standards, electrical blueprint reading, making electrical connections, large appliance wiring, grounding, conduit wiring, remodeling wiring, and estimating are all covered in this course.

■ **Electrical Motor Controls (809)** *72 hours*

Most electrical systems contain some sort of control devices. This course will cover the following types of controls: motor starters, solenoids, programmable controllers, reduced voltage starting, and variable frequency drives. Special emphasis will be on preventative maintenance and troubleshooting.

■ **Industrial Electronics & Robotics (810)** *72 hours*

To be successful with this course, the student must have an understanding of AC & DC circuits, basic algebra and trig. Topics covered include power sources, amplifiers, servo- mechanisms, digital circuits, microprocessors, optoelectronics, automation and robotics.

Floor Coverings

■ **Basic Technical Math (1520)** *72 hours*

A review of the fundamental math you probably learned in high school. Whole numbers, fractions, decimals, percents and graphs will be covered. In addition, basic measurements, ratios, and various types of equations are addressed.

■ **Math for Carpenters (601)** *72 hours*

This course combines mathematical concepts with information on skills and techniques of carpentry. Mathematical principles include whole numbers, fractions, decimals, ratios and proportions, and the fundamentals of algebra, geometry and trigonometry.

■ **Building Trades Print Reading 1 (605)** *72 hours*

You must have a plan before building something. Topics revolve around residential construction blueprints and include: working drawings, symbols and abbreviations, floor plans, elevation views, sectional views, detail views and trade information.

■ **Floor Coverings (2504)** *144 hours*

Common resilient sheet materials are addressed first, followed by tiles, adhesives, and carpet/padding materials. Next comes surface prep, basic layout and spreading of adhesives. Installation of carpet and the safe use of hand and power tools will be covered as well.

■ **Masonry Skills (505)** *72 hours*

This course provides instruction on specialized equipment, tools, and techniques used by masons to mix mortar, bond materials in patterns, and lay out the construction of walls and buildings.

■ **Psychology for Life & Work (1707)** *72 hours*

In order to succeed in your personal and work life, you must understand the world around you and those who live in it. You must know what motivates you and how your decisions and actions are influenced by things like your attitude and values. This course will help you identify some of the reasons why people, including you, behave the way they do.

Home Inspection Certificate

Successful completion of the following 10 courses will qualify you to



become a Certified Home Inspection Professional. Certificates will be issued by Century College in association with the American Society of Home Inspectors, Inc.

■ **Roofing (1120)** *144 hours*

In this first module, steep roofing, steep roof flashings, flat roofs and problems associated with these three areas will be covered. Field exercises will also be assigned.

■ **Structure (1121)** *144 hours*

Footings and foundations, floors, wall systems, and roof framing will be addressed, as well as associated problems that can occur. Field exercises will also be assigned.

■ **Electrical (1122)** *144 hours*

Service drop and service entrance, grounding and panels, and the distribution system will be studied in this module. Field exercises will also be assigned.

■ Heating 1 (1123) *144 hours*

Gas and oil furnaces, hot water boilers, and the problems associated with them, will be covered in this course. Field exercises will also be assigned.

■ Heating 2 (1124) *144 hours*

Chimneys, wood heat, steam systems, and electric heating will be addressed in this course, along with the potential problems associated with each. Field exercises will also be assigned.

■ Air Conditioning & Heat Pipes (1125) *144 hours*

Air conditioning systems and heat pumps, and their associated problems, will be discussed. Field exercises will also be assigned.

■ Plumbing (1126) *144 hours*

This course will cover: supply plumbing; water heaters; drain, waste and vent plumbing; and plumbing fixtures and faucets, along with their potential problems. Field exercises will also be assigned.

■ Exterior (1127) *144 hours*

Architectural styles, exterior cladding, exterior structures, surface water control and landscaping will all be covered, along with potential problems associated with each. Field exercises are also assigned.

■ Insulation & Interior (1128) *144 hours*

In this course, insulation, ventilation, and interiors (walls, floors, windows, etc.) will be covered, as well as the potential problems associated with each. Field exercises will also be assigned.

■ Communication & Professional Practices (1129) *144 hours*

This final course will help you get your Home Inspection business up and running. Topics covered include: typical clients, the inspection process, the real estate transaction, verbal communication, report writing, and liability issues.

Machine Tool & Die

■ Math for Machine Technicians (901) *72 hours*

Got questions?

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email **michael.gallagher@century.edu**

The presentation of basic math concepts will be accompanied by realistic, industry-related examples. Topic include: fractions and decimals, measurement, trigonometry, plane geometry and numerical control.

■ **Machine Shop Operators & Set-ups (903)** *72 hours*

This course covers the basics of machine tool operations. Topics include: measuring tools, bench tools, drill presses, grinding machines, steel and alloys, heat treating methods, machinability, numerical control and electrical energy processes.

■ **Machine Blueprint Reading (904)** *72 hours*

This is an introductory course that covers the reading of prints, object representation, and shop math. Also included are geometric dimensioning and tolerancing, threads and fasteners, sectional and auxiliary views, and comprehensive prints.

■ **Metallurgy (905)** *72 hours*

Ferrous and non-ferrous materials will be discussed, in addition to early history of iron and steel, shaping and forming of metals, mechanical properties of metals, testing of materials, classification of steels, welding metallurgy, alloys and bearing metals.

■ **Industrial Fluid Power 1 (1205)** *72 hours*

This is a broad overview of fluid power, covering principles, major components, and basic circuitry. Content includes: fluid power cylinders, control valves, air and hydraulic pumps, design calculations, troubleshooting procedures, and fluid power data.

■ **Industrial Fluid Power 2 (1206)** *72 hours*

This module covers these topics in depth: compressed air, hydraulics, and combination air/oil applications.

■ **Industrial Fluid Power 3 (1207)** *72 hours*

The following topics will be covered in even more depth: fluid motor types; force, torque and power; selection of hydraulic motors; hydraulic and electrical motors compared; closed loop transmissions; compressed air motors; power steering and bootstrapping.

Millwrights

■ **Basic Technical Math (1520)** *72 hours*

A review of the fundamental math you probably learned in high school.

Whole numbers, fractions, decimals, percents and graphs will be covered. In addition, basic measurements, ratios, and various types of equations will be addressed

■ **Math for Carpenters (601)** 72 hours

This course combines mathematical concepts with information on skills and techniques of carpentry. Mathematical principles include whole numbers, fractions, decimals, ratios and proportions, along with the fundamentals of algebra, geometry and trigonometry.

■ **Carpentry 1 (603)** 72 hours

This is part one of a two-part course. This section covers hand and power tools, fundamentals of construction equipment, safety, building designs and prints, survey basics, foundation and outdoor slab construction.

■ **Welding Principles (2909)** 36 hours

This course will discuss various types of welding, joints and welds. Joint design and fit-up will also be covered.

■ **Fundamentals of Electricity Part 1 (701)** 72 hours

This course will cover basic electrical concepts, such as electrical safety and atomic energy, then move on to Ohm's law, series and parallel circuits, AC and DC power, electric motors, various measurement tools, and finish with three phase three wire circuits.

■ **Fundamentals of Electricity Part 2 (706)** 72 hours

This course covers DC generators, AC generators, polyphase circuits, three phase Wye connections, three phase delta connections, alternators, alternative power sources, and transformers, DC motors and controls, relays and timers, three-phase motors, three phase motor installations, energy efficient motors, repulsion motors, Selsyn units, and motor maintenance. *Fundamentals of Electricity Part 1 to be completed before this course.*

■ **Building Trades Print Reading 1 (605)** 72 hours

You must have a plan before building something. Topics in this course will revolve around residential construction blueprints and include working drawings, symbols and abbreviations, floor plans, elevation views, sectional views, detail views and trade information.

■ **Machine Shop Operations & Set-ups (903)** 72 hours

This course covers the basics of machine tool operations. Topics include: measuring tools, bench tools, drill presses, grinding machines, steel and alloys, heat treating methods, machinability, numerical control and electrical energy processes.



■ **Machine Blueprint Reading (904)** *72 hours*

This is an introductory course that covers the reading of prints, object representation, and shop math. Also included are geometric dimensioning and tolerancing, threads and fasteners, sectional and auxiliary views, and comprehensive prints.

■ **Painting, Level 1 (1115)** *144 hours*

This is the first of three modules covering the painting industry. The following topics are addressed: careers, safety, ladders, identifying surfaces, basic surface preparation, sealants and repair, and brushing/rolling paint.

■ **Painting, Level 2 (1116)** *144 hours*

In this second module, topics will include: painting failures and remedies, job planning, advanced surface preparation, drywall finishing and patching, clear finishes, and various spray painting methods.

■ **Painting, Level 3 (1117)** *144 hours*

This is the third of three modules covering the painting industry. Advanced topics include: failures and remedies, supervision, decorative (faux) finishes, wall coverings, texturing, and spraying with special devices.

Pipefitting, Refrigeration and Warm Air

■ **Basic Technical Math (1520)** *72 hours*

A review of the fundamental math you probably learned in high school.

Whole numbers, fractions, decimals, percents and graphs will be covered. In addition, basic measurements, ratios, and various types of equations are addressed.

■ **Modern Refrigeration and Air Conditioning** (1503) *144 hours*

This course will help you become familiar with many types of refrigeration and air conditioning equipment in use today. It will also present theory and procedures which will prepare you for servicing/installing refrigeration and air conditioning systems.

■ **Electricity for Refrigeration (1504)** *72 hours*

This is an introduction to the electrical principles and practices required for the installation and service of refrigeration, heating, and air conditioning equipment. It will give you the knowledge required to successfully work with HVAC electricity.

■ **Electrical Motor Controls (809)** *72 hours*

Most electrical systems contain some sort of control devices. This course will cover the following types of controls: motor starters, solenoids, programmable controllers, reduced voltage starting, and variable frequency drives. Special emphasis will be on preventative maintenance and troubleshooting.

■ **Industrial Electronics & Robotics (810)** *72 hours*

To be successful with this course, the student must have an understanding of AC and DC circuits, basic algebra and trig. Topics covered include: power sources, amplifiers, servomechanisms, digital circuits, microprocessors, optoelectronics, automation and robotics.

■ **Low-Pressure Boilers (1605)** *72 hours*

This course begins with an explanation of boiler operation principles, and moves on to include boiler fittings, feedwater, steam, fuel, draft systems, boiler water treatment, boiler operating procedures, hot water heating and cooling systems, safety and licensing.

■ **High-Pressure Boilers (1606)** *72 hours*

Safe and efficient high-pressure operation is the focus of this course. Topics include: steam boilers, fittings and accessories, basic boiler room systems, steam and water accessories, fuel burning equipment, draft, combustion and controls, and steam boiler operation.

■ **AGA Fundamentals of Gas Combustion** (1550) *36 hours*

This course covers: the properties and characteristics of various gases; the chemistry and physics of combustion and poor combustion; design and operation of gas burners; burner orifices; and causes and solutions for

various burner problems.

■ **AGA Fundamentals of Gas Appliances and Venting (1551)** *36 hours*

Combustion indoors always requires venting. In this course you will learn the basic principles of venting and ventilation. Venting systems are described in detail, and code requirements for their use will be defined. Vent sizing and system design are also covered.

■ **AGA Fundamentals of Gas Appliances (1552)** *36 hours*

This course will cover cooking, water heating, space heating and other gas appliances. It will also address code requirements for venting, high-efficiency appliances, codes, and condensation disposal requirements.

■ **AGA Fundamentals of Electricity (1553)** *36 hours*

This is a basic introduction to electrical principles, as they apply to the maintenance and troubleshooting of appliances. The course also covers electrical terms, how circuit elements and components interact, and how they are represented.

■ **AGA Fundamentals of Gas Controls (1554)** *36 hours*

This course will discuss gas controls on appliances as they relate to maintenance and troubleshooting. It will describe devices for sensing temperature, pressure, flow, level, rotation, and flame. Specific applications of controls relating to all the major appliances will be covered.

■ **National Fuel Gas Codes (1625)** *36 hours*

This course is designed to make you familiar with the National Fuel Gas Code. It provides guidelines for the installation and operation of gas equipment, piping, and venting for domestic residences. This will help you install fuel gas systems safely.

■ **Uniform Mechanical Code (1559)** *36 hours*

Knowing the code will help you safeguard both people and property because it gives standards for installation and maintenance of HVAC and refrigeration systems.



■ Hydronics: The Basics (1179) *72 hours*

This course introduces the concept of hydronic heating by describing the classifications of various systems, heat loss from buildings, and the description, functions and ratings of hydronic system components.

■ Hydronics: System Design (1180) *72 hours*

Adding to the information in the previous module, this course discusses the identification, design and installation of hydronic heating systems. It explores simple design procedure and gives examples of how different types of systems are planned.

■ Regulator Pipe Sizing (1626) *36 hours*

This course covers all kinds of problems found in power and industrial pipe-bending and the fabrication of welded fittings. Soldering and brazing, of copper, plastic pipe methods, steel and wrought iron pipe are all addressed.

■ Digital Multimeters (1620) *36 hours*

These (DMMs) have become a standard diagnostic tool for technicians. Topics include: safety; symbols and terminology; DMM displays; measuring voltage, resistance and continuity; measuring AC and DC current; testing diodes; and DMM selection.

■ Electrical Schematics (1561) *36 hours*

The primary intent of this course is to familiarize you with the electrical schematics of high-efficiency home gas appliances. However, the concepts you will learn are universal and are applied to all troubleshooting situations.

■ Troubleshooting System for Gas Fitters (1564) *36 hours*

In this course you will learn a step-by-step method to systematically trace down the more common faults in most large appliances. The more common faults in most large appliances are covered. Air conditioners, boilers, dryers, furnaces, ranges and water heaters will be covered.

■ Multi-Fuel Boilers (1611) *144 hours*

This course covers general boiler knowledge of high and low pressure systems which are fired by both gas and oil as well as combined fuels.

Plumbing

■ Math for Plumbers & Pipefitters (1301) *72 hours*

Your math skills will be developed while working on practical problems such as layout, measurement, and computation of pipe lengths. Course

Got questions?

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content includes basic fundamentals, pipe length calculations, volumes, pressures and capacities.

■ **Blueprint Reding for Plumbers (1303)** *72 hours*

Interpretations of all trade drawings are covered as well as pipe drawings, isometric pipe layout, interpreting residential blueprints, and commercial building blueprints.

■ **Plumbing Design & Installation (1304)** *72 hours*

This course supplies general information about plumbing materials, tools, and equipment, and it provides an excellent background for basic plumbing techniques. Essential information about joining, installing and supporting pipe is also included, as well as fundamental information about sanitary drainage methods.

■ **Welding Principles (2909)** *36 hours*

This course will discuss various types of welding (SMAW, GMAW, GTAW), materials, techniques, joints and welds. Joint design and fit-up are also covered, as well as welding safety and terminology.

■ **MN Plumbing Code (1306)** *144 hours*

This course covers the laws and specifications for plumbing installations in Minnesota. Topics will include: licensing, general regulations, definitions, materials, joints, connections, traps and cleanouts, interceptors and backwater valves, fixtures, water supply and distribution. A guide for sizing the water supply system will also be included.

■ **Pumps (1307)** *72 hours*

There are many different types of pumps and applications for them. Items addressed here include: uses of pumps; pump hydraulics; propeller and turbine pumps; rotary pumps; metering pumps; special purpose pumps; packings and seals; and pump maintenance.

■ **Psychology for Life & Work (1707)** *72 hours*

In order to succeed in your personal and work life, you must understand the world around you and those who live in it. You must know what motivates you and how your decisions and actions are influenced by things like your attitude and values. This course will help you identify some of the reasons why people, including you, behave the way they do.

Sheet Metal

■ **Sheet Metal Hand Process (1701)** *72 hours*

Selection and use of hand tools will be covered, along with: basic metals, measuring and marking tools, bench tools, metal cutting tools,

Got questions?

Contact Mike Gallagher at **651-779-5782** or email **michael.gallagher@century.edu**

metal piercing tools, metal joining tools, special job tools, soldering processes and metal-working processes.

■ **Sheet Metal Machine Process (1702)** *72 hours*

This is a guide to power tools including: metal cutting machines, metal bending machines, metal forming machines, metal turning machines, metal punching machines, standard power-driven machines and portable power-operated tools.

■ **Sheet Metal Math (1703)** *72 hours*

Mathematical principles are introduced, broken down into step-by-step descriptions, and then examples are used to illustrate real sheet metal situations. Principles include: fractions, decimals, geometry, calculating perimeters and areas, volumes, ratios, and trigonometry.

■ **Sheet Metal Layout (1705)** *72 hours*

The focus of this course will be the geometric principles of layout as required for sheet metal working. Topics include: shop layout tools, geometric processes and shop drawings, layout, and pattern development.

■ **Sheet Metal Blueprint Reading (1708)** *72 hours*

This course explains how to interpret blueprints dealing with sheet metal work, as well as plans which involve symbols from other trades. Included are: symbols, warm air heating plans, ventilation plans, air conditioning plans, and blowpipe plans.

■ **Welding Principles (2909)** *36 hours*

This course will discuss various types of welding (SMAW, GMAW, GTAW), materials, techniques, joints and welds. Joint design and fit-up are also covered, as well as welding safety and terminology.

■ **Psychology for Life and Work (1707)** *72 hours*

In order to succeed in your personal and work life, you must understand the world around you and those who live in it. You must know what motivates you and how your decisions and actions are influenced by things like your attitude and values. This course will help you identify some of the reasons why people, including you, behave the way they do.

Welding

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and fit-up are also covered, as well as welding safety and terminology.

■ **Oxyfuel Operations (2910)** *36 hours*

This course discusses the differences between this and other types of welding, as well as flux characteristics, pre-heating and post-heating, welding of mild steel, stainless steel, cast and wrought iron.

■ **Arc Welding Operations (2911)** *36 hours*

This course will describe how metal arc welding works, what provides the shield in shielded metal arc welding, selection of electrodes, and personal protective equipment.

Century College's Distance Learning Department has served thousands of students in our more than 20 years of operation with quality instruction in an extremely flexible format. No time constraints, no computers, no rushing from work fighting traffic to attend a class. Study at your own pace anytime or place you want.

In addition to our correspondence courses listed in this catalog, we offer many online classes in cooperation with our online educational partners. These are instructor-led courses on a variety of trades and industry topics, as well as basic skills topics such as reading, writing, math, & algebra. As with our correspondence courses, these can be started at any time and you are able to work at your own pace.

Contact Mike Gallagher for a list of courses or for more information by phone **651-779-5782** or email michael.gallagher@century.edu.

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