

Area of Interest: Construction and Skilled Trades

## Mechanical Techniques - Plumbing

Ontario College Certificate

Program Code: 1521X01FWO

1 Year

Ottawa Campus

### Our Program

**Gain the basic skills to pursue a plumbing apprenticeship or explore related careers options.**

The one-year Mechanical Techniques - Plumbing Ontario College Certificate program equips you with the knowledge and skills needed to pursue a career in plumbing or other construction fields.

This program gives you entry-level skills that you can use to seek a recognized plumbing apprenticeship. You may also discover a career in a construction-related field.

Throughout the program, you learn a broad overview of the plumbing trade. Using both theory and hands-on practice, you learn:

- principles of design
- health and safety requirements
- soldering techniques.
- inter-professional communications
- practical installation practices

If you are new to design, plumbing, and construction, this program will help develop your skills. You learn the skills and knowledge needed for a career in the trade.

Graduates of this program may find employment in fields related to plumbing. These can include:

- construction labour
- retail and wholesale sales
- marketing of plumbing-related products

If you are looking for advancement in the field of plumbing, this program gives you the credentials to pursue a certified apprenticeship and become a licensed plumbing journeyman.

### SUCCESS FACTORS

This program is well-suited for students who:

- Possess good communication and interpersonal skills.
- Function well both individually and in a team environment.
- Possess strong problem-solving and analytical skills.
- Are able to work in confined spaces.
- Enjoy physical and hands-on work.
- Recognize the importance of detail and safety.

## Employment

Graduates may find employment as an apprentice in the plumbing field and also possess technical knowledge to pursue employment in commercial and/or residential plumbing sales and service.

## Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Complete all work in compliance with current legislation, standards, regulations and guidelines.
- Contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements.
- Comply with current health and safety legislation, as well as organizational practices and procedures.
- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.
- Use current and emerging technologies to support the implementation of plumbing projects.
- Troubleshoot and solve standard plumbing problems by applying mathematics and fundamentals of mechanics.
- Contribute to the interpretation and preparation of mechanical drawings and other related technical documents.
- Perform routine technical measurements accurately using appropriate instruments and equipment.
- Assist in manufacturing, assembling, maintaining and repairing plumbing components according to required specifications.
- Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic plumbing systems and components.

## Program of Study

Level: 01	Courses	Hours
DRA1510	Drawing Methods and Blueprint Reading	42.0
ELE1510	Introduction to Electrical Trade Theory	42.0
ENL1813T	Communications I	42.0
GED2012	Achieving Success in the 21st Century	42.0
MAT1510	Trade Math Calculations I	28.0
PLU1510	Construction Plumbing Theory I	42.0
PLU1511	Tools and Piping Materials I	70.0
SAF1510	Rigging, Hoisting and Workplace Safety	28.0
Level: 02	Courses	Hours
COM1520	Inter-Professional Trades Communication	42.0
DRA1520	Plumbing Drafting and Blueprint Reading	42.0

MAT1520	Trade Math Calculations II	28.0
PLU1521	Tools and Piping Materials II	84.0
PLU1523	Construction Plumbing Theory and Documentation	84.0
WEL1520	Welding Practices and Processes	28.0
WKT1520	Mechanical Techniques - Plumbing Work-Term	28.0

## Fees for the 2023/2024 Academic Year

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at <https://www.algonquincollege.com/fee-estimator>.

Further information on fees can be found by visiting the Registrar's Office website at <https://www.algonquincollege.com/ro>.

Fees are subject to change.

Additional program related expenses include:

- Textbooks cost approximately \$800 for the program. Books and supplies can be purchased at the campus store.
- Students are responsible for parking and locker fees, if applicable.
- All students are responsible to supply and use their own personal protective equipment (such as CSA-approved safety footwear, non-tinted protective eyewear, hearing protection, gloves, hard hat) as required in each lab environment.

## Admission Requirements for the 2024/2025 Academic Year

### College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent. Applicants with an OSSD showing senior English and/or Mathematics courses at the Basic Level, or with Workplace or Open courses, will be tested to determine their eligibility for admission; OR
- Academic and Career Entrance (ACE) certificate; OR
- General Educational Development (GED) certificate; OR
- Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing for which a fee of \$50 (subject to change) will be charged.

### Program Eligibility

- English, Grade 12 (ENG4C or equivalent).
- Mathematics, Grade 12 (MAP4C or equivalent).
- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).
- IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT) Overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20; OR Duolingo English Test (DET) Overall 110, minimum of 110 in Literacy and no score below 95.

Not sure if you meet all of the requirements? Academic Upgrading may be able to help with that:

<https://www.algonquincollege.com/access/> .

Should the number of qualified applicants exceed the number of available places, applicants will be selected on the basis of their proficiency in English and mathematics.

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## Application Information

### **MECHANICAL TECHNIQUES - PLUMBING** **Program Code 1521X01FWO**

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca  
60 Corporate Court  
Guelph, Ontario N1G 5J3  
1-888-892-2228

Students currently enrolled in an Ontario secondary school should notify their Guidance Office prior to their online application at <http://www.ontariocolleges.ca/> .

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants please visit this link for application process information: <https://algonquincollege.force.com/myACint/> .

For further information on the admissions process, contact:

Registrar`s Office

Algonquin College  
1385 Woodroffe Ave  
Ottawa, ON K2G 1V8  
Telephone: 613-727-0002  
Toll-free: 1-800-565-4723  
TTY: 613-727-7766  
Fax: 613-727-7632  
Contact: <https://www.algonquincollege.com/ro>

### **Additional Information**

Students are responsible for securing their own construction-related placement for their mandatory work term; this may include some weekends.

### **Contact Information**

#### **Program Coordinator(s)**

- Gregory Gourgon, <mailto:gourgog@algonquincollege.com>, 613-727-4723, ext. 7249

### **Course Descriptions**

#### **COM1520 Inter-Professional Trades Communication**

Successful interaction between individuals relies on effective communication skills. Communication with and perspective of other trades promotes success in the construction industry. Students discover relevant knowledge to support interaction with other tradespeople. Common trade interactions include carpentry, HVAC, welding, electrical, architecture, civil engineering and other trades. Students also develop job search and preparation skill such as resume writing, cover letter creation and interviewing techniques.

Prerequisite(s): none  
Corerequisite(s):none

#### **DRA1510 Drawing Methods and Blueprint Reading**

The blueprint of a project provides an easily-understood visual representation used by tradespeople. Students interpret and create basic architectural drawings and schematics. The emphasis is on the development of the student's ability to both use and create three dimensional isometric, and two dimensional orthographic drawings and representations. Students develop skills in both applied drafting theory and layout to produce drawings in a lab environment, explain plans and understand and implement the use of relevant symbols and icons specific to the plumbing trade.

Prerequisite(s): none  
Corerequisite(s):none

#### **DRA1520 Plumbing Drafting and Blueprint Reading**

The construction trade requires the ability to create and customize blueprints conforming to plumbing specifications. Students expand knowledge of interpreting and disseminating the information found in both mechanical and architectural drawings. An emphasis is on the interpretation of plan and elevation drawings, as well as an introduction to mechanical layout and design as it pertains to plumbing systems. In a drafting lab environment, students create layouts and drain plans by defining and relating trade specific systems and appurtenances from specifications and drawings.

Prerequisite(s): DRA1510  
Corerequisite(s):none

#### **ELE1510 Introduction to Electrical Trade Theory**

With electricity being the main power source globally, possessing a fundamental working knowledge of electricity is a desirable skillset in the trades. Students examine both theoretical and practical concepts of basic electricity and electrical circuits. Students also cover the use and

application of basic electrical trouble-shooting and testing methods. Lab exercises reinforce theoretical learning.

Prerequisite(s): none  
Corerequisite(s):none

### **ENL1813T Communications I**

Communication remains an essential skill sought by employers, regardless of discipline or field of study. Using a practical, vocation-oriented approach, students focus on meeting the requirements of effective communication. Through a combination of lectures, exercises, and independent learning, students practise writing, speaking, reading, listening, locating and documenting information and using technology to communicate professionally. Students develop and strengthen communication skills that contribute to success in both educational and workplace environments.

Prerequisite(s): none  
Corerequisite(s):none

### **GED2012 Achieving Success in the 21st Century**

Rapid changes in technology have created new employment and business opportunities that challenge each of us to find our place as citizens in the emerging society. Life in the 21st century presents significant opportunities, creates potential hazards and demands that we face new responsibilities in ethical ways. Students explore the possibilities ahead, assess their own aptitudes and strengths, and apply critical thinking and decision-making tools to help resolve some of the important issues present in our complex society with its competing interests.

Prerequisite(s): none  
Corerequisite(s):none

### **MAT1510 Trade Math Calculations I**

In the field of plumbing, people use basic math skills on a daily basis. An emphasis is placed on the student's ability to use and comprehend core basic math skills to solve trade-related calculations, such as offsets, travel, pipe sizing, system dimensions and heat calculations using whole numbers, fractions, decimals, powers and square roots. Unit conversions are completed within and between Imperial, U.S Customary and Metric System of Measurements. Latent heat and specific heat capacity calculations are completed.

Prerequisite(s): none  
Corerequisite(s):none

### **MAT1520 Trade Math Calculations II**

Possessing the ability to solve trade-related problems using math is essential in the workplace. An emphasis is placed on the student's ability to use and comprehend core basic math skills to solve trade-related calculations, such as solving for the area and volume of various shapes including tanks and cylinders. Through theory and class-based assignments, students also learn to calculate percentages, discounts and solve ratio and proportion problems.

Prerequisite(s): MAT1510  
Corerequisite(s):none

### **PLU1510 Construction Plumbing Theory I**

A great deal of science and rationale goes into the decisions as to why and where plumbing materials are applied for appropriate situations. Students develop a basic understanding of plumbing theory. Emphasis is on illustrating the various types of drainage, waste and venting methods found in plumbing systems, as well as various fixtures and appurtenances used in the plumbing trade. Students develop skills in calculating the appropriate size, selection of material and implementation of plumbing systems through the application of the Ontario Plumbing Code and relevant regulations for all plumbing projects.

Prerequisite(s): none  
Corerequisite(s):none

**PLU1511 Tools and Piping Materials I**

Making the connection between theory and application is essential for the safe and accurate installation of plumbing systems. Students concentrate on the properties of generic hand and power tools, as well as those specific to the plumbing trade. The focus is on safety and the selection of the appropriate tool for the respective task. Through an introductory overview, students develop the ability to size, cut and fit materials, as well as operate the tools and equipment necessary to complete an efficient installation. Students also learn to perform tasks from written and oral instructions, as well as to conform to plumbing codes and regulations, as well as tool manufacturer's recognized operating procedures.

Prerequisite(s): none  
Corerequisite(s):none

**PLU1521 Tools and Piping Materials II**

The ability to apply basic methods to install, repair and maintain plumbing systems are essential skills for individuals entering the plumbing trade. Through hands-on practical application, students concentrate on the safe and proper use of generic hand and power tools, as well as those specific to the plumbing trade. Emphasis is on safety, selection and use of the appropriate tool for the respective task. Building on acquired skills and knowledge, students continue to develop skills in the cutting and fitting of materials, the safe operation of machinery and tools, as well as the integration of plumbing theory and practical skills to complete group projects and installations.

Prerequisite(s): PLU1511  
Corerequisite(s):none

**PLU1523 Construction Plumbing Theory and Documentation**

Many plumbing projects require complex and customized plumbing solutions. Students gain theory behind the integration of plumbing systems in building construction. Emphasis is on illustrating the various types of drainage, waste venting methods found in plumbing systems, as well as various fixtures and appurtenances used in the plumbing trade while managing of documentation pertaining to cost and material analysis for projects while organizing and planning a plumbing construction project. Students develop skills in calculating the appropriate size, material and implementation of plumbing projects. Students expand on individual concepts to show how they are integrated into various plumbing projects. The culmination of this project is the submission of a documented bid for pricing which provides an accurate overview of the scope of manpower and materials required.

Prerequisite(s): none  
Corerequisite(s):none

**SAF1510 Rigging, Hoisting and Workplace Safety**

Possessing the knowledge of and ability to apply safety on the worksite is essential to oneself and others. Students new to trade programs build an introductory skill set of safe working practices by examining the legislation that regulates construction in the modern workplace. Emphasis is on a thorough understanding of current Occupational Health and Safety Legislation, as well as well-established and recognized safe working procedures needed to work safely for one self and with others. Students develop an understanding of the Workplace Hazardous Materials Information System (WHMIS), fall protection, hoisting and rigging theory and skills and their need in the workplace.

Prerequisite(s): none  
Corerequisite(s):none

**WEL1520 Welding Practices and Processes**

Possessing introductory skills and knowledge in the welding trade is valuable across many other

trades. Students develop practical introductory techniques in safe welding procedures and practices to complement existing skill sets. Emphasis is on safety precautions required when using oxyacetylene welding and cutting equipment. Students examine attributes of flame temperatures, metal joining processes and cutting procedures. Through hands-on application in a lab environment, students gain practical skills in brazing, hard soldering, and cutting and welding in the flat position.

Prerequisite(s): none

Corerequisite(s):none

### **WKT1520 Mechanical Techniques - Plumbing Work-Term**

Gaining workplace exposure provides students with insight into the day-to-day operations of the jobsite. Throughout the work term, students observe some of the practical application of theories and concepts studied and practised throughout the program. Students complete a work term and report documenting details of the experience, such as challenges, opportunities and interpersonal interactions in relation to employment in a construction environment.

Prerequisite(s): DRA1510 and MAT1510 and PLU1510 and PLU1511 and SAF1510

Corerequisite(s):none