Area of Interest: Construction and Skilled Trades

Welding and Fabrication Techniques

Ontario College Certificate

Program Code: 1507X01FWO

42 Weeks

Ottawa Campus

Our Program

Learn using the latest technology.

The one-year Welding and Fabrication Techniques Ontario College Certificate program provides foundation skills to gain entry-level employment in the welding industry.

Participate in a combination of theory and shop work, and learn metal fabrication techniques and welding, acquiring a solid foundation of principles for the field.

All classes are taught in Algonquin College`s state-of-the-art Algonquin Centre for Construction Excellence (ACCE) facility, where you have the opportunity to use up-to-date equipment and learn about advanced technology in the welding and fabrication field, including:

- gas tungsten arc welding (GTAW)
- shielded metal arc welding (SMAW)
- gas metal arc welding (GMAW)

Learn metallurgy, and joint and metal preparation. Gain the ability to take technical measurements using the right tools, set up and safely operate equipment for various processes, and read and interpret blueprints and welding specifications.

You also have the opportunity to take additional welding qualifications throughout the program. You can complete the Canadian Welding Bureau (CWB) Qualification of Welding Procedures test for different forms of welding. These can include shielded metal arc, gas metal arc, and flux-cored arc. These can be used in one or more positions.

Graduates may find work in a variety of different positions in the welding field:

- machine shops
- fabrication facilities
- manufacturing companies
- ship repair
- mining

SUCCESS FACTORS

This program is well-suited for students who:

- Thrive in an active, hands-on learning environment.
- Enjoy working independently and as a member of a team.
- Are interested in mechanical processes.

Employment

Graduates may find work in a broad variety of industries including machine shops, fabrication and manufacturing companies, ship repair, mining, building construction and welding inspection.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Work safely and in accordance with all relevant legislation, regulations, guidelines and procedures.
- Read and interpret blueprints and welding specifications.
- Identify and select materials and processes for fabrication projects.
- Perform basic technical measurements using appropriate tools.
- Use shop tools and equipment for the manufacture and repair of components to required specifications.
- Work both independently and as a team member within established practices and procedures in a shop environment.
- Set up and safely operate equipment for various welding processes.
- Assess weld quality and implement corrective action where required.
- Set up and operate equipment for Shielded Metal Arc Welding (SMAW) applications and perform these in a variety of positions.
- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

Level: 01	Courses	Hours
GED2012	Achieving Success in the 21st Century	42.0
MAT8584	Mathematics	28.0
WEL1011	Welding Techniques Lab	112.0
WEL1013	Welding Techniques	42.0
Level: 02	**Courses**	**Hours**
DRA1022	Mechanical Engineered Drawings	42.0
WEL1021	Welding Fabrication Lab I	112.0
WEL1022	Welding Fabrication Theory I	42.0
WEL1023	Metallurgy and Distortion	42.0
Level: 03	**Courses**	**Hours**
ENL1813T	Communications I	42.0
WEL1033	Welding Fabrication Lab II	112.0
WEL1034	Welding Fabrication Theory II	42.0

Fees for the 2023/2024 Academic Year

Tuition and 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:

- The program incidental fees include personal protective equipment (hearing protection, gloves and a welding shield) and textbooks.

- Students may choose to complete external Canadian Welding Bureau (CWB) Qualification of Welding Procedures test for different types of welding (shielded metal arc, gas metal arc, flux-cored arc or gas tungsten arc) in one or more position (flat, horizontal, vertical, overhead). The additional fees for CWB qualification testing are the responsibility of the student.

- Students are responsible for parking and locker fees, if applicable.

- All students are responsible to supply their own CSA-approved leather, steel toe work boots. Any other types of footwear are not acceptable.

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

WELDING AND FABRICATION TECHNIQUES
Program Code 1507X01FWO

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

Apply directly to this program through OntarioColleges.ca or our International Application Portal.

Welding theory courses are hybrid, students are required to have a laptop to successfully complete the work. Laptops can be borrowed from the college if needed.

This program has a Fall and Spring intake.

Contact Information

Program Coordinator(s)

- Guy Seguin, mailto:seguing@algonquincollege.com , 613-727-4723, ext. 6763

Course Descriptions

DRA1022 Mechanical Engineered Drawings

Interpretation skills for blueprints and layouts related to the welding and fabrication field are established. Students learn how to read and interpret mechanical and component prints, technical and working drawings, sectional views, and point to point dimensioning. Welding symbols and welding joint configurations are also introduced.

Prerequisite(s): MAT8584 and WEL1013
Corerequisite(s):WEL1021 and WEL1022

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

MAT8584 Mathematics

Welders regularly measure, and calculate distances, areas and volumes. Students develop the skills to efficiently add, subtract, multiply and divide decimals and fractions, as well as to calculate distances, areas and volumes in both metric and U.S. customary units. Students use ratio and proportion for scale modelling and rate problems and they use percentages for estimating and tax calculations. Students explore basic math operations along with exponents and algebra to aid them with their calculations.

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

WEL1011 Welding Techniques Lab

Students demonstrate and practise various types of basic welding, including gas tungsten arc welding (GTAW) and shielded metal arc welding (SMAW). Students also practise GTAW and SMAW

in both flat and horizontal positions.

Prerequisite(s): none
Corerequisite(s):WEL1013

WEL1013 Welding Techniques

Basic welding and fabrication concepts are explored. Students learn about the assembly of various components, including the storage, safe handling and proper use of welding equipment. Safety requirements and potential hazards are stressed for all aspects of fuel gas and electric welding and shop work.

Prerequisite(s): none
Corerequisite(s):WEL1011

WEL1021 Welding Fabrication Lab I

Students use a variety of hand and power tools to produce welding projects. They practise gas tungsten arc welding (GTAW) on steel and stainless steel in the flat and horizontal positions. Students may also practise shielded metal arc welding (SMAW) in both vertical and overhead positions.

Prerequisite(s): WEL1011 and WEL1013
Corerequisite(s):DRA1022 and WEL1022 and WEL1023

WEL1022 Welding Fabrication Theory I

Welding processes, including gas tungsten arc welding (GTAW) and shielded metal arc welding (SMAW), are introduced. Students are also instructed in the safe use of hand tools and measuring devices used for fabrication and fit-up of welding projects.

Prerequisite(s): WEL1011 and WEL1013
Corerequisite(s):WEL1021

WEL1023 Metallurgy and Distortion

Understanding metallurgy is critical to the success of a welder. Students examine characteristics, attributes, and composition of metals through the application of heat and physical force. Basic inspection methods are also explored.

Prerequisite(s): WEL1011 and WEL1013
Corerequisite(s):WEL1021 and WEL1022

WEL1033 Welding Fabrication Lab II

Students apply advanced skills and knowledge to various welding and fabrication projects. They perform gas tungsten arc welding (GTAW) with mild and stainless steel in multiple positions. Gas metal arc welding (GMAW) and flux-cored arc welding (FCAW) are also performed in multiple positions.

Prerequisite(s): WEL1021 and WEL1022
Corerequisite(s):WEL1034

WEL1034 Welding Fabrication Theory II

Welding authorities, such as the Canadian Standards Association (CSA), the Canadian Welding Bureau (CWB) and the American Welding Society (AWS) are discussed along with their part in the welding industry. Students are also introduced to various gas metal arc welding (GMAW), flux-cored arc welding (FCAW) and other wire fed processes. Advanced fabrication techniques, such as working with jigs, are studied.

Prerequisite(s): WEL1021 and WEL1022

Corerequisite(s):WEL1033