

# WELDING TECHNIQUES

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## Program Outline

<b>Major:</b>	WETC
<b>Length:</b>	1 Year
<b>Delivery:</b>	2 Semesters
<b>Credential:</b>	Ontario College Certificate
<b>Effective:</b>	2017-2018
<b>Location:</b>	Midland, Owen Sound
<b>Start:</b>	Fall (Midland, Owen Sound)

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### Description

Students are provided with the theoretical and practical training to perform most basic welding techniques. At the completion of the program, students are eligible to test for welding tickets based on their level of expertise. It is expected that most of the graduates will be prepared to enter the workforce as a Welder following the successful completion of this program.

Students are exposed to topics including health and safety, blueprint reading and sketching, applied math, communication, shielded metal arc welding, gas metal arc welding, introduction to computers, and all position pipe welding.

### Career Opportunities

Graduates may find a range of occupations in the welding field, including manufacturing and fabricating, automotive and heavy equipment production, automation, and construction. Self-employment is another viable option upon graduation.

### Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

- perform work responsibly and in compliance with the Occupational Health and Safety Act;

- interpret engineering drawings and blueprints and produce basic graphics required by industry;
- recognize and understand use of welding symbols;
- use layout and fabrication processes typical to the industry to determine correct form with accuracy;
- select appropriate tools and devices to perform mathematical calculations and technical measurements for successful completion of a project;
- perform weld applications utilizing Shielded Metal Arc(SMAW), Flux Core(FCAW) and Gas Metal Arc(GMAW – Mig Welding) welding equipment;
- use welding techniques according to industry standards;
- create high quality welds on various types of material and create joints in the flat, horizontal, vertical and overhead positions;
- identify how to prevent weld defects and define procedures for correction to ensure weld quality;
- communicate clearly, concisely, and correctly in the written, spoken and visual form that fulfils the purpose and meets the need of the audience;
- contribute to the development, implementation and maintenance of environmentally sustainable practices within the welding industry;
- discover business skills and career opportunities that could lead to entrepreneurial opportunities.

### **The Program Progression:**

Fall Intake – Midland, Owen Sound

Sem 1 | Sem 2

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Fall | Winter

2017 | 2018

### **Admission Requirements:**

OSSD or equivalent with

- Grade 12 English (C or U)

Mature students, non-secondary school applicants (19 years or older), and home school applicants may also be considered for admission. Eligibility may be met by applicants who have taken equivalent courses, upgrading, completed their GED, and equivalency testing. For complete details refer to: [www.georgiancollege.ca/admissions/policies-procedures/](http://www.georgiancollege.ca/admissions/policies-procedures/)

Applicants who have taken courses from a recognized and accredited post-secondary institution and/or have relevant life/learning experience may also be considered for admission; refer to the Credit Transfer Centre website for details:  
[www.georgiancollege.ca/admissions/credit-transfer/](http://www.georgiancollege.ca/admissions/credit-transfer/)

**Graduation Requirements:**

10 Mandatory Courses

1 Communications Course

1 General Education Course

**Graduation Eligibility:**

To graduate from this program, the passing weighted average for promotion through each semester, and to graduate is 60%. Additionally, a student must attain a minimum of 50% or a letter grade of P (Pass) or S (Satisfactory) in each course in each semester unless otherwise stated on the course outline.

**Mandatory Courses**

WETC1000 Manufacturing Trade Safety  
WETC1001 Blueprint Reading for the Trades  
WETC1002 Trade Calculations for Welders  
WETC1004 Shielded Metal Arc Welding 1  
WETC1005 Metallurgy for Welding  
WETC1006 Shielded Metal Arc Welding 2  
WETC1007 Gas Metal Arc Welding  
WETC1008 Gas Tungsten Arc Welding  
WETC1013 Welding and Cutting Processes  
WETC1014 Layout and Fabrication

**Communications Course**

To be selected at time of registration from the College list, as determined by testing.

**General Education Course**

To be selected from College list

**Course Descriptions:****WETC1000 Manufacturing Trade Safety 42.0 Hours**

In this course, students learn how to work safely in a potentially dangerous environment. Specifically, they learn how to identify hazardous conditions and how to identify workplace accidents. Personal, workplace and welding machinery/equipment are emphasized throughout the course. Students learn how to research safety related issues (i.e.: legislation and regulations) using the internet.

**WETC1001 Blueprint Reading for the Trades 42.0 Hours**

In this course, students learn how to interpret a variety of drawings and schematics typically found in a welding and fabricating environment. Emphasis is placed on drawing interpretation, basic drafting, sketching, and common welding symbols.

**WETC1002 Trade Calculations for Welders 42.0 Hours**

In this course students learn basic analytical skills typically used in a trades environment. Topics include basic number operations, basic algebraic and geometric operations, units and measurements, and the solving of word problems.

**WETC1004 Shielded Metal Arc Welding 1 98.0 Hours**

In this course, students learn how to use the Shielded Metal Arc Welding (S.M.A.W.) process in both the flat and horizontal positions. Students examine the equipment requirements for the S.M.A.W. process along with the characteristics of mild steel electrodes. On successful completion of this course, students can apply for CWB certification.

**WETC1005 Metallurgy for Welding 42.0 Hours**

In this course students examine the basic metallurgical properties of steel and the changes that take place during cutting and welding operations. Students develop an understanding of the problems associated with these changes and strategies on how to avoid or minimize their adverse effects. In addition, various weld defects and faults which can occur in the shop floor environment are examined. Additional topics including heat treatment, stress relief and distortion are discussed in depth.

**WETC1006 Shielded Metal Arc Welding 2 70.0 Hours**

In this course students build on their basic knowledge and skills of welding in order to weld mild steel in all positions. Topics include equipment requirements, developments in the many different welding processes, welding codes and governing organizations.

**WETC1007 Gas Metal Arc Welding 84.0 Hours**

In this course students learn how to use the Gas Metal Arc Welding (GMAW) process on mild steel, stainless steel and aluminum. Students also learn the application of Flux Cored Arc Welding (FCAW). Throughout the course safety principles and equipment requirements of GMAW are emphasized. Students successfully completing this course will be eligible to take the Canadian Welding Bureau Certificate test (CWB).

**WETC1008 Gas Tungsten Arc Welding 42.0 Hours**

In this course students learn the Gas Tungsten Arc Welding (GTAW) process. They complete welding projects on mild steel, stainless steel and aluminum to acceptable industry standards. Throughout the course safety principles and equipment requirements are emphasized.

**WETC1013 Welding and Cutting Processes 42.0 Hours**

In this course, students are introduced to the principles and fundamental processes of arc welding, oxy-fuel cutting, power units and their controls. Emphasis is placed on the safe set up and operation of oxy-fuel welding and cutting equipment.

**WETC1014 Layout and Fabrication 56.0 Hours**

In this course students develop a working knowledge of the concepts and principles of layout and fabrication using accepted methods and conventions typically found in industry. Students develop their skills in laying out flat and circular objects including using the triangulations, radial line and parallel line developments in sheet and pipe.

**Course Description Legend**

P = Prerequisite; C = Concurrent prerequisite; CO= Corequisite

*Information contained in College documents respecting programs is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs. The college reserves the right to add or delete programs, options, courses, timetables or campus locations subject to sufficient enrolment, and the availability of courses.*