

## Course Outline

<b>Course Title:</b>	Welding Processes & Practices		
<b>Course Number:</b>	MECH254	<b>Approval Date:</b>	2018/9/3
<b>Course Hours:</b>	60 hours	<b>Academic Year:</b>	2018
<b>Academic School:</b>	School of Trades & Technology		

<b>Faculty:</b>	Gary Hoadley - Gary.Hoadley@flemingcollege.ca Michael Mulville - Michael.Mulville@flemingcollege.ca Steven Simpson - Steven.Simpson@flemingcollege.ca Valentin Bolsterli - valentin.bolsterli@flemingcollege.ca
<b>Program Co-ordinator or Equivalent:</b>	Darryl Madussi - Darryl.Madussi@flemingcollege.ca
<b>Dean (or Chair):</b>	Jason Jackson - jason.jackson@flemingcollege.ca

## Course Description

This course provides students with an opportunity to practice the fundamental processes of welding. Welding processes covered in this course include OFW, SMAW, GMAW and oxy-fuel cutting. In addition, students will apply techniques in fusion welding, brazing and cutting. Students will apply safe handling procedures for the use of potentially dangerous equipment in accordance with industry standards.

**Prerequisites:** None.

**Corequisites:** None.

## Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the safe material handling operations, Industrial Safety Acts and potential workplace hazards in accordance with government safety regulations, manufacturers recommendations and approved industry standards.
2. Describe the necessary personal protection against common shop and construction hazards.
3. Explain the safe use and operation of equipment including the storage and handling of compressed gas cylinders.

4. Perform safe set-up, operation and maintain equipment for Oxy-Fuel Welding (OFW), Oxy-Fuel Cutting (OFC), Braze Welding (BW), Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW).
5. Demonstrate correct identification, care and use of various measuring and marking devices.
6. Perform fillet and groove welds on mild steel with the OFW process, the BW process, the OFC process, the SMAW process, and the GMAW process
7. Create plate work lines and punch marks that are clear and accurately placed on patterns and templates.
8. Explain and demonstrate the safe set-up and operation of various tools and equipment used in a welding shop.
9. Describe the functions and controls of welding power sources in accordance with government safety regulations, manufacturers recommendations and approved industry standards.
10. Apply sustainable practices in the welding shop.

## Learning Resources

On-line materials.

## Assessment Summary

Assessment Task	Percentage
In-class activities	7.5%
Labs	20%
Quizzes	15%
Assignments	45%
Tests	12.0%

## Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- [Academic Integrity \(2-201A\)](https://department.flemingcollege.ca/hr/attachment/7750/download)  
(https://department.flemingcollege.ca/hr/attachment/7750/download)
- [Accessibility for Persons with Disabilities \(3-341\)](https://department.flemingcollege.ca/hr/attachment/5619/download)  
(https://department.flemingcollege.ca/hr/attachment/5619/download)
- [Grading and Academic Standing \(2-201C\)](https://department.flemingcollege.ca/hr/attachment/7752/download)  
(https://department.flemingcollege.ca/hr/attachment/7752/download)

- [Guidelines for Professional Practice: Students and Faculty](https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)  
(<https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf>)
- [Student Rights and Responsibilities \(5-506\)](https://department.flemingcollege.ca/hr/attachment/269/download)  
(<https://department.flemingcollege.ca/hr/attachment/269/download>)

**Alternate accessible formats of learning resources and materials will be provided, on request.**

## Program Standards

The Ministry of Training, Colleges and Universities oversees the development and the review of standards for programs of instruction. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the [Ministry of Training, Colleges and Universities](#) (MTCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MTCU link ([www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/](http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/))

## Detail Plan

<b>Term:</b>	2018 Fall
<b>Faculty:</b>	Michael Mulville - Michael.Mulville@flemingcollege.ca Gary Hoadley - Gary.Hoadley@flemingcollege.ca Valentin Bolsterli - valentin.bolsterli@flemingcollege.ca Steven Simpson - Steven.Simpson@flemingcollege.ca
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# Learning Plan

<b>Wks/Hrs Units</b>	<b>Topics, Resources, Learning, Activities</b>	<b>Learning Outcomes</b>	<b>Assessment</b>
Module 1 Lecture	Course Outcomes, PPE	1, 2	Quiz 1
Module 1 Lab	Shop & Equipment Review & implement safety in the work place. Safely start up Oxy-fuel Equipment	1, 2, 3, 4, 5	Shop Checklist
Module 2 Lecture	Oxyfuel Welding Safety and Set-up, Grinder Safety	1, 2, 3, 4, 12	Quiz 2
Module 2 Lab	OFW, Grinder Safety	1, 2, 3, 4, 6, 12, 14	Shop Checklist, Grinder Safety Quiz and Practical
Module 3 Lecture	Braze Welding, Shear Safety	1, 2, 3, 4, 12	Quiz 3
Module 3 Lab	OFW, Shear Safety	1, 2, 3, 4, 6, 12, 14	Shop Checklist, Shear Quiz and Practical
Module 4 Lecture	OFC, Pedestal Grinder Safety	1, 2, 3, 4, 12	Quiz 4
Module 4 Lab	OFW Evaluation, Pedestal Grinder Safety	1, 2, 3, 4, 6, 12, 14	OFW Evaluation #1, Shop Checklist, Pedestal Grinder Quiz and Practical
Module 5 Lecture	Arc Welding Safety	1, 2, 4	Quiz 5
Module 5 Lab	BW, OFC	1, 2, 3, 4, 5, 7, 8, 9, 12, 14	Shop Checklist
Module 6 Lecture	SMAW Safety and Equipment, Iron Worker Safety	1, 2, 4, 12, 13	Quiz 6
Module 6 Lab	BW, OFC, Iron Worker Safety	1, 2, 3, 4, 5, 7, 8, 9, 12, 14	Shop Checklist, Iron Worker Safety Quiz and Practical

<b>Wks/Hrs Units</b>	<b>Topics, Resources, Learning, Activities</b>	<b>Learning Outcomes</b>	<b>Assessment</b>
Module 7 Lecture	Midterm Test - Covers Modules 1 - 6.	1, 2, 3, 5, 12, 13	Midterm Test
Module 7 Lab	BW Evaluation, OFC Evaluation	1, 2, 3, 4, 5, 7, 8, 9, 12, 14	BW Evaluation #2, OFC Evaluation #3, Shop Checklist
Module 8 Lecture	SMAW Techniques, Chop Saw Safety	1, 2, 4, 12, 13	Quiz 7
Module 8 Lab	SMAW Padding, Chop Saw Safety	1, 2, 4, 5, 10, 12, 13, 14	Shop Checklist, Chop Saw Quiz and Practical
Module 9 Lecture	GMAW Safety and Equipment	1, 2, 4, 12, 13	Quiz 8
Module 9 Lab	SMAW Padding	1, 2, 4, 5, 10, 12, 13, 14	Shop Checklist
Module 10 Lecture	GMAW Techniques, Band Saw Safety	1, 2, 4, 12, 13	Quiz 9
Module 10 Lab	SMAW Evaluation, Band Saw Safety	1, 2, 4, 5, 10, 12, 13, 14	SMAW Evaluation #4, Band Saw Safety Quiz and Practical, Shop Checklist
Module 11 Lecture	Distortion Control	1, 2, 9, 13	Quiz 10
Module 11 Lab	GMAW	1, 2, 3, 4, 11, 12, 13, 14	Shop Checklist
Module 12 Lecture	Review: Modules 1 to 4, Overhead Crane Safety	1, 2, 3, 12, 13	
Module 12 Lab	GMAW, Overhead Crane Safety	1, 2, 3, 4, 11, 12, 13, 14	Shop Checklist, Overhead Crane Safety and Practical

<b>Wks/Hrs Units</b>	<b>Topics, Resources, Learning, Activities</b>	<b>Learning Outcomes</b>	<b>Assessment</b>
Module 13 Lecture	Review: Modules 5, 6 and 8 to 11	1, 2, 3, 12, 13	
Module 13 Lab	GMAW, Missed Equipment Safety	1, 2, 3, 4, 11, 12, 13, 14	Shop Checklist, Missed Equipment Safety Quiz and Practical
Module 14 Lecture	Final Exam - Covers Modules 1 - 11	1, 2, 3, 12, 13	Final Exam
Module 14 Lab	GMAW Evaluation	1, 2, 3, 4, 5, 11, 12, 13, 14	GMAW Evaluation #5, Shop Checklist

## Assessment Requirements

<b>Assessment Task</b>	<b>Date/Weeks</b>	<b>Course Learning Outcome</b>	<b>Percentage</b>
10 Quizzes worth a total of 7.5% towards your final mark. You will be quizzed on the all topics covered in the lecture preceding each lab.	1 Quiz for Module 1 - 6 and Module 8 - 11	1, 2, 3, 4, 12, 13	7.5%
7 Equipment quizzes worth a total of 7.5% of your final mark. These quizzes must be done in order to obtain a Pass/Fail in the "Equipment Sign Off".	1 Quiz for each piece of equipment: Hand Grinders, Pedestal Grinders, Shear, Iron Worker, Chop Saw, Horizontal Band Saw and Overhead Crane	1, 2, 12	7.5%
2 Tests a Midterm (40%) and a Final Exam (60%) worth a total of 12.5% towards your final mark	Mid Term - Following Module 6, Final Exam - completed in the last week of the course	1, 2, 3, 12, 13	12.5%
7 Equipment Sign Offs worth a total of 7.5% towards your final mark. This is a pass/fail assessment which, if successful will earn you a license to operate Hand Grinders, Bench Grinders, Shear, Iron Worker, Chop Saw, Horizontal Band Saw and a Gantry Crane	Following the lecture for that equipment or as shop time permits	1, 2, 12, 13	7.5%

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
Daily Lab Checklists, to earn these marks you must be present in the shop to hand in the check list, no check list will be accepted after the end of the corresponding lab. This rule will be strictly enforced.	1 for each lab	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	20%
5 Projects worth a total of 45% towards your final mark, there will be 5 projects which will assess the five processes practiced during the semester; OFW, OFC, BW, SMAW and GMAW	Scheduled by the professor	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	45%

Note: All assessments must be done on the day indicated. For safety concerns anyone who has missed labs working towards an assessment shall not be able to do the practical project without prior approval from the instructor.

Weekly lecture quizzes must be complete prior to the lab or entry into the lab may not be granted.

Equipment theory quiz must be passed prior to the practical assesment in the lab.

## Exemption Contact

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## Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: <http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition>

## Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

### ACADEMIC RESPONSIBILITIES

Mutually, faculty and learners will support and adhere to college Academic Regulations and Student Rights and Responsibilities. In addition, the following guidelines have been developed to support the learning process.

1. To gain the most possible benefit from this skill developing course, students need to attend classes. Learning takes place when you become engaged in the learning process. Your instructor will be recording attendance data and will report absences, late arrivals and early departures to your program co-ordinator.
2. All tests and lab assignments have scheduled due/completion dates. Meeting these due dates is key to your success in this course: your instructor's feedback will add to your learning.
3. Therefore, you must write all tests with the class on the tests' assigned dates. As well, you must complete all lab assignments by the scheduled due date during the schedule lab time.
4. You will receive a grade of zero for any test not written or lab assignment not completed unless you have made arrangements with your instructor **PRIOR TO** the due date in question.
5. Your instructor will consider a makeup for missed assignments or tests for valid reasons only; for example, documented illness or extenuating personal circumstances. These situations will be discussed on an individual basis.
6. You, the student, are responsible for making these arrangements; you're learning and success in this course is a shared goal.
7. Final grades in this course are assigned based on the level of achievement that corresponds to the assessment components as cited in the course outline. It is important to note that faculty member(s) will not offer additional evaluation activities (**NO CREDIT RECOVERY**) beyond those cited in the course outline.

### LATE ASSIGNMENT POLICY

You must submit/present all written/oral assignments on their assigned dates unless you make specific arrangements in writing/voice mail/E-mail with your professor at least 24 hours prior to the due date in question. In the case of any emergency, make arrangements (in writing, if necessary) immediately upon your return.

Your professor will make special arrangements for valid reasons only. In the case illness, you may be required to provide a medical note. Other extenuating circumstances will be discussed on an individual



basis.

A penalty of 25% will be applied to an assignment not submitted by the original or extended due date, a 50% deduction will be applied after 24 hours. An assignment more 1 week late will receive a grade of zero ("0"). No assignment will be accepted after the last day of classes without prior arrangement with your professor.

### **ACADEMIC INTEGRITY**

Fleming College opposes any form of academic dishonesty, such as plagiarism, submission of work for which credit has already been received; cheating, impersonation; falsification or fabrication of data; the acquisition of confidential material, e.g., examination papers; misrepresentation of facts; altering transcripts or other official documents. Please see Academic Regulations Policy for more information on Academic Integrity.