DURHAM COLLEGE
SUCCESS MATTERS

Faculty of STA (Skld Trds)

Trade Fundamentals Plumbing

2023-24 Academic Year

Program Title	Ministry Title	Major	Year	Semester
STA-Trades Fundamentals	--	TRDE	1	1

Course Code:	TFBP 1303	**Course Equiv. Code(s):**	N/A
Course Hours:	42	**Course GPA Weighting:**	3
Prerequisite:	N/A		
Corequisite:	N/A		
Laptop Course:	**Yes** [ ] **No** [X]		
Delivery Mode(s):	**In class** [X] **Online** [ ] **Hybrid** [ ] **Flexible** [ ] **HyFlex** [ ]		
Remote proctoring required	**Yes** [ ] **No** [X]		
Authorized by (Dean or Director):	Rebecca Milburn	**Date:**	August 2023

Prepared by		
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Course Description:

Plumbing careers can encompass work from the installation, repair and maintenance of pipes and fixtures to the complex installation of plumbing systems in residential, commercial and industrial buildings. This course provides the students with an introduction to piping systems, joining methods and practices commonly used in the plumbing industry and how they relate to the Ontario Building Code. Students will be introduced to piping projects with real world applications.

Campus Closure Notice

In the event of a campus closure during which time classes cannot be conducted or attended in person, course

delivery will be conducted remotely where possible. Should teaching and learning resume on campus, students may be organized into smaller groups for classroom delivery, in accordance with directions from public health authorities. In either situation, the learning plan sequence and/or evaluation methods may be adjusted to address topics requiring hands-on, practical learning activities.

Subject Eligibility for Prior Learning Assessment & Recognition (PLAR):

Prior Learning Assessment and Recognition (PLAR) is a process a student can use to gain college credit(s) for learning and skills acquired through previous life and work experiences. Candidates who successfully meet the course learning outcomes of a specific course may be granted credit based on the successful assessment of their prior learning. The type of assessment method (s) used will be determined by subject matter experts. Grades received for the PLAR challenge will be included in the calculation of a student's grade point average.

The PLAR application process is outlined in http://www.durhamcollege.ca/plar. Full-time and part-time students must adhere to all deadline dates. Please email: PLAR@durhamcollege.ca for details.

PLAR Eligibility

Yes [ ] **No** [X]

PLAR Assessment (if eligible):

- [ ] Assignment
- [ ] Exam
- [ ] Portfolio
- [ ] Other

Course Learning Outcomes

Course Learning Outcomes contribute to the achievement of Program Learning Outcomes for courses that lead to a credential (e.g. diploma). A complete list of Vocational/Program Learning Outcomes and Essential Employability Skill Outcomes are located in each Program Guide.

Course Specific Learning Outcomes (CLO)

Student receiving a credit for this course will have reliably demonstrated their ability to:

CLO1	Adhere to all health and safety requirements of the Plumbing shop as well as any classrooms and laboratories.
CLO2	Identify educational pathways and career opportunities within the trade of Plumbing including post-secondary and apprenticeship models as well as various job opportunities within this profession.
CLO3	Identify, select, and safely use various measuring tools, instruments, hand tools and power tools to complete piping projects.
CLO4	Complete trade calculations in a successful manner related to the trade of Plumbing.
CLO5	Apply basic trade knowledge and related terminology to communicate effectively in a Plumbing setting.
CLO6	Complete basic Plumbing projects using appropriate tools, techniques, equipment and supplies.

Essential Employability Skill Outcomes (ESSO)

This course will contribute to the achievement of the following Essential Employability Skills:

- [ ] EES 1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
- [X] EES 2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- [X] EES 3. Execute mathematical operations accurately.
- [X] EES 4. Apply a systematic approach to solve problems.
- [ ] EES 5. Use a variety of thinking skills to anticipate and solve problems.
- [X] EES 6. Locate, select, organize, and document information using appropriate technology and information systems.
- [ ] EES 7. Analyze, evaluate, and apply relevant information from a variety of sources.
- [ ] EES 8. Show respect for the diverse opinions, values, belief systems, and contribution of others.
- [X] EES 9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
- [X] EES 10. Manage the use of time and other resources to complete projects.
- [X] EES 11. Take responsibility for one's own actions, decisions, and consequences.

Evaluation Criteria:

The Course Learning Outcomes and Essential Employability Skills Outcomes are evaluated by the following evaluation criterion.

Evaluation Description	Course Learning Outcomes	EESOs	Weighting
Assignment: Safety Orientation Assignment	CLO1	EES2, EES6, EES10	5
Assignment: Hand tool identification and safe use assignment	CLO1, CLO3	EES2, EES6, EES10	5
Assignment: Fitting allowance assignment	CLO3, CLO4	EES3, EES4	5
Lab Activity: Project #1 - Hard copper pipe	CLO1, CLO3, CLO4, CLO6	EES3, EES9, EES10	10
Lab Activity: Project #2 - Steel pipe	CLO1, CLO3, CLO4, CLO6	EES3, EES9, EES10	10
Lab Activity: Project #3 - Plastic pipe	CLO1, CLO3, CLO4, CLO6	EES3, EES9, EES10	10
Lab Activity: Project #4 - Final	CLO1, CLO3, CLO4, CLO6	EES3, EES9, EES10, EES11	25
Lab Activity: General ongoing shop clean up.	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6	EES9, EES11	5
Test: Final Test	CLO2, CLO4, CLO5	EES2, EES3, EES4, EES6, EES10	25
Total			**100%**

Notes:

1. Students absent when assignments, quizzes, and tests are completed in class may receive a grade of "0" (zero) for that portion of their mark
2. All assignments must be submitted on time. Assignments are to be submitted at the beginning of class on the due date unless otherwise directed by the professor. Late assignments will be penalized 10% if one day late and 20% if two days late. They will be graded "0" (zero) if they are three or more days late, acknowledging a heavy penalty in keeping with the importance placed on deadlines within the workplace environment unless otherwise directed by the professor.
3. Online exercises (1 to 4) must be completed before beginning the associated shop project. Online exercise 5 must be completed after Project #4 has been submitted. The mark for the completion of these exercises will be incorporated into final project grades as indicated in the sequence of instruction.
4. All written assignments must be type written. Specific requirements regarding format and referencing will be presented in class.
5. Projects and assignments which are completed in groups will be given a group mark and your individual mark will be based on this mark and any individual work assigned. If you do not fully participate in these group activities (i.e. you were away) your individual mark will be adjusted accordingly. As an example, if a group project was scheduled for 4 shop sessions and you missed 1 complete session, the "group portion" of your mark will be 75% (3/4) of the actual grade.
6. An interim mark will be determined for all students to identify their academic progress. This mark will be based on assignments and shop projects.

Required Text(s) and Supplies:

1. A calculator with basic functions

2. Personal Protective Equipment
   - CSA approved (Green Patch) safety footwear,
   - Hardhat
   - Safety glasses

3. Tape measure, minimum 12 feet long (Imperial is mandatory, Metric is optional)

Recommended Resources (purchase is optional):

1. IPT's Pipe Trades Handbook
2. Coveralls or shop coat (do not wear coveralls or shop coats in classrooms)
3. Work gloves (for safety reasons, the use of gloves may be restricted while utilizing some shop equipment)

Policies and Expectations for the Learning Environment:

General Policies and Expectations:

General College policies related to	General policies related to
+ Acceptable Use of Information Technology + Academic Policies + Academic Integrity + Standards for Student Conduct for all Learning Environments can be found at https://durhamcollege.ca/wp-content/uploads/Standards-of-Student-Conduct-for-all-Learning-Environments.pdf + Information about academic policies and procedures can be found on-line at https://durhamcollege.ca/about/governance/policies	+ attendance + absence related to tests or assignment due dates + excused absences + writing tests and assignments + classroom management can be found in the Program Guide (full time programs only) in MyDC https://durhamcollege.ca/mydc/

All students at Durham College have the responsibility to familiarize themselves with and abide by the college's Academic Integrity Policy. Students are expected to complete and submit their own work in an honest manner, in accordance with the policy. Durham College has zero tolerance for breaches of academic integrity. All suspected breaches of academic integrity will be investigated and documented following procedures outlined in the policy, and should a breach be confirmed, appropriate penalties will be levied. Breaches of academic integrity refer to a variety of practices including, but not limited to:

• copying another person's work;
• using unauthorized materials or resources during an evaluation;
• obtaining unauthorized copies of evaluations in advance;
• collaborating without permission;
• colluding or providing unauthorized assistance;
• falsifying academic documents or records;
• misrepresenting academic credentials;
• buying, selling, stealing, soliciting, exchanging or transacting materials or information for the purpose of academic gain;
• bribing or attempting to bribe personnel;
• impersonation;
• submitting the same work in more than one course without authorization;
• improper use of computer technology and the internet;
• depriving others of academic resources;
• misrepresenting reasons for special consideration of academic work;
• plagiarizing or failing to acknowledge ideas, data, graphics or other content without proper and full acknowledgement;
• any unauthorized use of generative or other artificial intelligence.

If you have questions or concerns about what constitutes appropriate academic conduct or research and citation methods, and what your responsibilities are towards academic integrity, please visit the Academic Integrity website on MyDC, reach out to Student Academic Learning Services (SALS), or speak with your professor or Student Advisor.

Course Specific Policies and Expectations:

STUDENT CONDUCT: Students are expected to conduct themselves in a professional manner while on campus and off campus. Students are expected to comply with the program's professional conduct, appearance, and safety expectations found in the Program Guide and to understand and comply with off-site policies and procedures. It is everyone's responsibility to have respect for their peers.
CELL PHONES/PAGERS: Electronic communication devices will be turned off and not used in the classroom unless part of the objectives or learning activities of a course or lesson. Students who disrupt a class to the detriment of the other members of the class will be asked to leave.
MISSED TESTS: The opportunity to write a missed test is discretionary and may be granted based on meeting the following criteria: notifying the professor prior to the scheduled test time; submitting appropriate documentation (e.g. note from doctor, dentist etc) to validate the absence to the subject professor, and meeting with the professor.
PEER INTERACTION AND FEEDBACK: Students are expected to participate with their peers in active learning activities and demonstrations. These demonstrations provide students with opportunities for written/verbal feedback from their peers, instructor, and others on the application of learned course material.
ATTENDANCE: Students are expected to attend all lecture and practical sessions for this course. Failure to do so could result in serious gaps in knowledge that may result in safety breaches in the shop environment. If the professor feels that a student is not being "safe" in the shop, the professor will remove the student from the environment. Students must wear PPE in the shop environment and follow safety guidelines. Failure to do so will result in the student being asked to leave and negate their opportunity to complete projects/assessments.
It is college policy that no food is brought to classrooms. Beverages such as coffee, juice, water etc. will be allowed at the discretion of your professors. This privilege may be revoked at any time if refuse is left behind at the end of class. Please ensure that you and your fellow students clean up after themselves.
No food or drink is allowed in shop areas at any time.
Please do not enter the plumbing shop(s) unless accompanied by your professor. This shop is a multi-user facility and you may be interrupting another class if not accompanied by your professor.
Breaks are to be taken as a whole class and will be announced by your professor. You cannot continue to work in the shop while the class is on a break.
The nature of this subject is that attendance is imperative to successful completion. Attendance will be taken at the beginning and end of scheduled shop sessions. Please do not leave the shop area until cleanup is complete, tools are accounted for and stored, attendance has been taken and the class is dismissed by your professor.
Workplace safety is a primary focus in all workshop and lab settings. Students are expected to work in a safe manner and follow all prescribed safety rules whenever they are in a workshop or lab.
- Students who endanger themselves or others will be asked to leave the class at the professor's discretion. Disciplinary action will be taken.
- Wilful misuse of lab/shop equipment will result in expulsion from the lab and a corresponding mark of zero (0) for that lab/shop session.
- It is absolutely imperative that students wear the personal protective equipment required by the safety policy for the workshop or lab that they are using. You will not be allowed in the workshop and lab area or to work on projects unless you wear prescribed safety equipment.
Durham College Course Outline - TFBP 1303 -
- Shorts, sandals and "tank tops" must not be worn. Any other items, which are safety concerns, must be removed or addressed before working (i.e. necklaces, earrings, exposed body piercing(s), loose clothing, gloves, etc.). Long hair must be tied back.
- No electronic equipment (i.e. cell phones, cameras, personal music equipment, etc) may be taken into any shop, lab or practical working area.
- If you are barred from working in the workshop or lab for a scheduled class you will receive a mark of zero for any labs, projects, assignments/tests for that particular class. If attendance is taken you will be marked absent from that class.
DO NOT use any tools or equipment unless YOUR PROFESSOR has instructed you in their safe operation. You must have specific authorization from the college before using any equipment in a shop/lab.
- Working in any workshop or lab area without the supervision of your professor is strictly prohibited.
Impaired judgment is a safety issue. If your professor suspects that your judgement may be impaired, you will not be allowed to participate in workshop or lab activities.
Please report all safety concerns immediately to the supervising staff.

General Course Outline Notes:

1. Students should use the course outline as a learning tool to guide their achievement of the learning outcomes for this course. Specific questions should be directed to their individual professor.
2. The college considers the electronic communication methods (i.e. DC Mail or DC Connect) as the primary channel of communication. Students should check the sources regularly for current course information.
3. Professors are responsible for following this outline and facilitating the learning as detailed in this outline.
4. Course outlines should be retained for future needs (i.e. university credits, transfer of credits etc.)
5. A full description of the Academic Appeals Process can be found at https://durhamcollege.ca/about/governance/policies/academic-policies .
6. Faculty are committed to ensuring accessible learning for all students. Students who would like assistance with academic access and accommodations in accordance with the Ontario Human Rights Code should register with the Access and Support Centre (ASC). ASC is located in room SW116, Oshawa Campus and in room 180 at the Whitby Campus. Contact ASC at 905-721-3123 for more information.
7. Durham College is committed to the fundamental values of preserving academic integrity. Durham College and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments could be subject to submission either by themselves or by the faculty member for a review of textual similarity to Turnitin.com. Further information about Turnitin can be found on the Turnitin.com Web site.

Learning Plan

The Learning Plan is a planning guideline. Actual delivery of content may vary with circumstances.

Students will be notified in writing of changes that involve the addition or deletion of learning outcomes or evaluations, prior to changes being implemented, as specified in the Course Outline Policy and Procedure at Durham College.

Week/ Module	**Hours:** 1 **Delivery:** In Class
1	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6, EES9 **Practiced:** EES2, EES6, EES9
	Intended Learning Objectives/Topics -Introduction to course, review of course outline. -Expectations for Class Learning Environment. -Safety Theory. -PPE & ladders
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Course Outline. Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
1	**Course Learning Outcomes** CLO1, CLO3, CLO5
	Essential Employability Skills
	Taught: EES2, EES9 **Practiced:** EES2, EES9
	Intended Learning Objectives/Topics Plumbing Shop Safety Orientation. -including fire safety
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Assignment: Safety Orientation Assignment 10 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
2	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Introduction and discussion on Piping Tools. Piping Tools Hand and Power Tools used in the Plumbing industry -Identification & Applications Reading a foot/inch tape measure
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation **Weighting** 5

Week/ Module	Hours: 2 Delivery: Shop
2	**Course Learning Outcomes** CLO1, CLO3, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Safety Orientation Assignment due at the beginning of class. Hand Tools used for Pipe Fabrication and Joining -Hand Tool Identification -Hand Tools Safety -Power Tools Safety (general) -Hand Tool Application
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Assignment: Hand tool identification and safe use assignment 10 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
3	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Copper Pipe -Introduction to Hard Copper Pipe, Preparation, Assembly and Pipe Measuring Terminology oPipe and Tube designations and sizing -Types of solder -Pipe and fitting preparation -Soldering principles and techniques -Introduction to Pipe Measuring Terminology and Techniques -Shop project introduction and explanation
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
3	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES4, EES9 **Practiced:** EES2, EES3, EES4, EES9
	Intended Learning Objectives/Topics Hand Tool Identification and Safe Use Assignment Due at the beginning of class Cutting, Preparing and Measuring Copper Pipe and Assemblies
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: General ongoing shop clean up. 5

Week/ Module	Hours: 1 Delivery: In Class
4	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Pipe Fitting Pipe fitting terminology -Outside diameter -Inside diameter -Nominal pipe size -Measuring Pipe -Centre to centre dimensions -End to end dimensions -Other types of pipe dimensions Introduction to Pipe Fitting -Thread Engagement and Pipe Insertion Depth -Fitting Allowance -Calculation of End to End dimensions -Fitting Allowance Assignment
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation **Weighting** 5

Week/ Module	Hours: 2 Delivery: Shop
4	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES3 **Practiced:** EES3
	Intended Learning Objectives/Topics Determine fitting allowances. -Measure fittings and pipe insertion depth to determine the fitting allowance of a variety of fittings -Fitting Allowance Assignment
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Assignment: Fitting allowance assignment 10 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
5	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES6 **Practiced:** EES6
	Intended Learning Objectives/Topics Pipe Fitting -Alternative methods for determining fitting allowance and end to end dimensions -Introduction of Hard Copper Pipe Project -Project introduction and calculation of the pipe measurements required for completion -Explanation of Online Exercise #1 for Fitting Allowance Assignment Reflection and Project #1 Planning
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation **Weighting** Assignment: Fitting allowance assignment 5

Week/ Module	**Hours:** 2 **Delivery:** Shop
5	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES4, EES9 **Practiced:** EES2, EES3, EES4, EES9
	Intended Learning Objectives/Topics Project #1- Hard Copper Pipe -Online Exercise #1 due at beginning of class -Demo -Cut and prepare copper pipe and fittings -Solder copper pipe and fittings for project -Fitting Allowance Assignment due
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: General ongoing shop clean up. 5

Week/ Module	**Hours:** 1 **Delivery:** In Class
6	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Steel Pipe Applications and Installation Practices -Pipe thread principles o American Standard Pipe Threads o Left and right hand threads o Tapered and parallel threads o Female and male fittings o Standard thread engagement of various pipe sizes - Threaded pipe joints o Thread sealant (pipe dope and Teflon tape) o Hand tight thread engagement o Wrench make up o Proper use of pipe wrenches
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
6	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES9, EES10 **Practiced:** EES2, EES9, EES10
	Intended Learning Objectives/Topics Hard Copper Pipe Preparation and Assembly -Demonstrate copper tube preparation and soft soldering practices -Cut and prepare copper pipe and fittings -Solder copper pipe and fittings for project -Pressure test assembled project -Project grading
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: Project #1 - Hard copper pipe 15 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
7	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Steel Pipe Fitting Calculations -calculate fitting allowances when face to centre dimensions are known -Calculate end to end dimensions when centre to centre dimensions are known Steel pipe unions -Applications that require the use of a union -Calculation of pipe measurements when unions are required in a pipeline Project #2- Steel Pipe hand out
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
7	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES9, EES10 **Practiced:** EES2, EES3, EES9, EES10
	Intended Learning Objectives/Topics Steel Pipe Project -Project introduction -Steel Pipe Threading (hand threading only) -Use and application of thread sealants (dope and Teflon tape) - Proper use of pipe wrenches for joint assembly -Pipe measurement calculations -Explanation of Online Exercise #2 for Copper Pipe Project Reflection and Project #2 Planning
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation
Week/ Module	**Hours:** 1 **Delivery:** In Class
8	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Plastic Pipe used in the plumbing industry ABS, PVC and CPVC piping o Characteristics o Plumbing applications o Joining Methods and fittings o Transition between material
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: General ongoing shop clean up. 5

Week/ Module	Hours: 2 Delivery: Shop
8	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES9, EES10 **Practiced:** EES2, EES3, EES9, EES10
	Intended Learning Objectives/Topics Steel Pipe Project -Online Exercise #2 due at beginning of class -Project #2- Steel Pipe -Pipe Preparation and Assembly
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: General ongoing shop clean up. 5
Week/ Module	**Hours:** 1 **Delivery:** In Class
9	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Plastic Pipe used in the plumbing industry -Solvent Cementing Plastic Pipe -Online assignment
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
9	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES9, EES10 **Practiced:** EES2, EES3, EES9, EES10
	Intended Learning Objectives/Topics Project #2 - Steel Pipe -Pipe Preparation and Assembly -Project completion and grading
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: Project #2 - Steel pipe 15 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
10	**Course Learning Outcomes** CLO1, CLO5
	Essential Employability Skills
	Taught: EES2, EES6 **Practiced:** EES2, EES6
	Intended Learning Objectives/Topics Plastic Pipe used in the plumbing industry PE and PEX piping -Characteristics -Plumbing applications -PE insert fittings and gear clamps -PEX barbed fittings, crimping tools and installation practices Introduction Project #3- Plastic Pipe Explanation of Online Exercise #3 for Steel Pipe Project Reflection and Project #3 Planning
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
10	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES3, EES4, EES9 **Practiced:** EES2, EES3, EES4, EES9
	Intended Learning Objectives/Topics Project #3- Plastic Pipe -Online Exercise #3 due at beginning of class -Cut, prepare and assemble plastic pipe and fittings
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: General ongoing shop clean up. 5
Week/ Module	**Hours:** 1 **Delivery:** In Class
11	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES6 **Practiced:** EES6
	Intended Learning Objectives/Topics Project #4- Final Project Introduction and Planning - Project introduction - Project planning
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2 Delivery: Shop
11	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6
	Essential Employability Skills
	Taught: EES2, EES9, EES10, EES11 **Practiced:** EES2, EES9, EES10, EES11
	Intended Learning Objectives/Topics Project #3- Plastic Pipe -Cut, prepare and assemble plastic pipe and fittings -Project completion and grading
	Intended Learning Activities Demonstration and practice.
	Resources and References Handouts.
	Evaluation **Weighting** Lab Activity: Project #3 - Plastic pipe 15 Lab Activity: General ongoing shop clean up.
Week/ Module	**Hours:** 1 **Delivery:** In Class
12	**Course Learning Outcomes** CLO1, CLO4, CLO5
	Essential Employability Skills
	Taught: EES2, EES3, EES4 **Practiced:** EES2, EES3, EES4
	Intended Learning Objectives/Topics Final Project Planning and Calculations -Final planning for project fabrication -Pipe calculations for final project -Explanation of Online Exercise #4 for Plastic Pipe Project Reflection and Project #4 Planning
	Intended Learning Activities Lecture, guided discussion, active learning.
	Resources and References Handouts.
	Evaluation

Week/ Module	Hours: 2	Delivery: Shop		
12	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught: EES2, EES3, EES4, EES9, EES10, EES11		**Practiced:** EES2, EES3, EES4, EES9, EES10, EES11	
	Intended Learning Objectives/Topics Project #4- Final Project -Online Exercise #4 due at beginning of class -Pipe cutting, preparation and project assembly			
	Intended Learning Activities Demonstration and practice.			
	Resources and References Handouts.			
	Evaluation			**Weighting**
	Lab Activity: General ongoing shop clean up.			5
Week/ Module	**Hours:** 1	**Delivery:** In Class		
13	**Course Learning Outcomes** CLO2			
	Essential Employability Skills			
	Taught: EES2, EES6		**Practiced:** EES2, EES6	
	Intended Learning Objectives/Topics The Apprenticeship System in Ontario -Partners in the apprenticeship system in Ontario -Regulated vs. Non-regulated trades in Ontario -Apprenticeship Incentive Grants and other government initiatives supporting apprentices and employers Plumbing Apprenticeship -On-the-job training requirements -Overview of in-school training -Completing an apprenticeship -Certificate of Qualification requirements and Red Seal Certification			
	Intended Learning Activities Lecture, guided discussion, active learning.			
	Resources and References Handouts.			
	Evaluation			

Week/ Module	Hours: 2	Delivery: Shop		
13	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught: EES2, EES3, EES4, EES9, EES10, EES11		**Practiced:** EES2, EES3, EES4, EES9, EES10, EES11	
	Intended Learning Objectives/Topics Final Project -Pipe cutting, preparation and project assembly			
	Intended Learning Activities Demonstration and practice.			
	Resources and References Handouts.			
	Evaluation Lab Activity: General ongoing shop clean up.			**Weighting** 5
Week/ Module	**Hours:** 1	**Delivery:** In Class		
14	**Course Learning Outcomes** CLO2			
	Essential Employability Skills			
	Taught: EES2, EES6		**Practiced:** EES2, EES6	
	Intended Learning Objectives/Topics - Exploring Plumbing Career Options - Industry Sectors - Getting started with a plumbing apprenticeship - Job search strategies Final Test Explanation of Online Exercise #5 for Final Project Reflection			
	Intended Learning Activities Lecture, guided discussion, active learning.			
	Resources and References Handouts.			
	Evaluation Test: Final Test			**Weighting** 25

Week/ Module	Hours: 2	Delivery: Shop		
14	**Course Learning Outcomes** CLO1, CLO3, CLO4, CLO5, CLO6			
	Essential Employability Skills			
	Taught: EES2, EES3, EES4, EES9, EES10, EES11		**Practiced:** EES2, EES3, EES4, EES9, EES10, EES11	
	Intended Learning Objectives/Topics Final Project -Pipe cutting, preparation and project assembly -Project Completion and Grading			
	Intended Learning Activities Demonstration and practice.			
	Resources and References Handouts.			
	Evaluation			**Weighting**
	Lab Activity: Project #4 - Final			30
	Lab Activity: General ongoing shop clean up.			
Week/ Module	**Hours:** 0	**Delivery:** In Class		
0	**Course Learning Outcomes** CLO2, CLO4, CLO5			
	Essential Employability Skills			
	Taught: EES2, EES3, EES4, EES6, EES10, EES11		**Practiced:** EES2, EES3, EES4, EES6, EES10, EES11	
	Intended Learning Objectives/Topics N/A			
	Intended Learning Activities N/A			
	Resources and References N/A			
	Evaluation			**Weighting**
				25