

COURSE PLA3406: HAND AND POWER TOOLS

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students demonstrate maintenance and use of hand tools and power tools to safely complete various plumbing jobs.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

- 1. use hand tools common to the pipe trades**
 - 1.1 identify hand tools used in the pipe trades
 - 1.2 describe the use of hand tools
 - 1.3 describe the maintenance of hand tools
- 2. use power tools common to the pipe trades**
 - 2.1 identify power tools used in the pipe trades
 - 2.2 describe the use of power tools
 - 2.3 describe the maintenance of power tools
- 3. demonstrate basic competencies**
 - 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
 - 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
 - 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks
- 4. create a transitional strategy to accommodate personal changes and build personal values**
 - 4.1 identify short-term and long-term goals
 - 4.2 identify steps to achieve goals

COURSE PLA3411: WELDED PIPE AND FITTINGS

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students identify and describe welded pipe and fittings.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

1. construct welded and flanged piping system components

- 1.1 identify types, markings, designations, and pressure ratings for welded pipe and fittings
- 1.2 identify stud tensioning systems
- 1.3 state factors, methods, and torque measurements for bolt ups
- 1.4 identify types, markings, designations, temperature, and pressure ratings of flanged fittings and gaskets
- 1.5 describe the fabrication process for welded pipe and fittings to the tack-up stage
- 1.6 describe flange preparation and joining techniques for flanged joints

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3416: PLASTIC PIPE AND TUBES

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students identify, describe, and demonstrate the construction of plastic pipe and tubes.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

1. construct plastic piping and tubing systems

- 1.1 identify types, applications, and designations of plastic pipe, tubing, and fittings
- 1.2 describe fabrication processes for solvent welding plastic pipe
- 1.3 describe fabrication processes for plastic pipe and tubing using alternative joining methods
- 1.4 describe fabrication processes for bell-end joints
- 1.5 describe fabrication processes for plastic pipe using thermal fusion and electric resistance welding
- 1.6 fabricate and test a solvent weld spool to the manufacturer's specifications
- 1.7 fabricate and test a fusion weld spool to the manufacturer's specifications

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3421: THREADED AND GROOVED PIPE

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students develop an understanding of threaded and grooved pipe.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

1. construct threaded and grooved piping system components

- 1.1 identify types, markings, designations, temperature, and pressure ratings of ferrous pipe and fittings
- 1.2 identify applications of codes, regulations, and manufacturer's specifications
- 1.3 describe the composition of ferrous, alloyed, and non-ferrous pipe
- 1.4 calculate cut length for threaded and grooved pipe
- 1.5 describe the fabrication steps for threading and grooving pipe
- 1.6 demonstrate the use of hand tools to thread and groove pipe
- 1.7 demonstrate the use of power tools to thread and groove pipe
- 1.8 assemble and pressure test an assigned project

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3426: TUBES, TUBING, AND VALVES

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students develop an understanding of tubes, tubing systems, and valves.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

1. construct tube and tubing system components

- 1.1 identify types, designations, and pressure ratings
- 1.2 identify fitting types and joining techniques
- 1.3 identify applications and manufacturer's specifications pertaining to joining methods
- 1.4 identify application to health and safety issues pertaining to joining methods
- 1.5 describe the process for bending tubing
- 1.6 describe the fabrication process pertaining to joining methods
- 1.7 assemble and pressure test an assigned project including flared, compression joints, and bending components

2. install valves in piping systems

- 2.1 identify types of valves
- 2.2 describe major design variations of valves and their applications
- 2.3 describe service and maintenance procedures of valves
- 2.4 explain the purpose of manufacturer's instructions

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

- 4.1 identify short-term and long-term goals
- 4.2 identify steps to achieve goals

COURSE PLA3431: INSTALL AND TEST PIPING SYSTEMS

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students develop an understanding of pressure testing and pumps and install hangers, supports, and fasteners.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

- 1. install hangers, supports, and fasteners for piping systems**
 - 1.1 identify types of hangers, supports, and fasteners
 - 1.2 describe applications of hangers, supports, and fasteners
 - 1.3 describe installation techniques for hangers, supports, and fasteners
 - 1.4 explain specifications and manufacturer's requirements for hangers, supports, and fasteners
- 2. pressure test a piping system**
 - 2.1 identify equipment used for pressure testing piping installations
 - 2.2 describe procedures and requirements for pneumatic and hydrostatic testing
 - 2.3 describe hazards specific to pressure testing
- 3. describe pumps for piping systems**
 - 3.1 identify types of pumps
 - 3.2 describe differences in pumps
 - 3.3 describe factors affecting the operation of a pump
- 4. demonstrate basic competencies**
 - 4.1 demonstrate fundamental skills to:
 - 4.1.1 communicate
 - 4.1.2 manage information
 - 4.1.3 use numbers
 - 4.1.4 think and solve problems
 - 4.2 demonstrate personal management skills to:
 - 4.2.1 demonstrate positive attitudes and behaviours
 - 4.2.2 be responsible
 - 4.2.3 be adaptable
 - 4.2.4 learn continuously
 - 4.2.5 work safely
 - 4.3 demonstrate teamwork skills to:
 - 4.3.1 work with others
 - 4.3.2 participate in projects and tasks
- 5. create a transitional strategy to accommodate personal changes and build personal values**
 - 5.1 identify short-term and long-term goals
 - 5.2 identify steps to achieve goals

COURSE PLA3436: WELDING SAFETY AND FABRICATION

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students develop an understanding of welding equipment and the basics of welding.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

1. apply safe work practices according to *Occupational Health and Safety Act* (OHS) legislation

- 1.1 identify hazards for welding and cutting operations
- 1.2 identify personal protective equipment for welding and cutting operations
- 1.3 explain hazards involved with welding fumes and gases
- 1.4 identify welding fume ventilation methods
- 1.5 explain effects of electricity and describe precautions used to prevent injury
- 1.6 describe procedures for welding or cutting in confined spaces
- 1.7 interpret general safety regulations in the *Occupational Health and Safety Act*

2. use oxyfuel and arc welding equipment

- 2.1 identify five basic joint types
- 2.2 describe types of welds and their required dimensions
- 2.3 identify types of metals using practical tests
- 2.4 identify and use oxyfuel cutting equipment
- 2.5 identify and use arc welding equipment

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

- 4.1 identify short-term and long-term goals
- 4.2 identify steps to achieve goals

COURSE PLA3441: BRACKET AND SPOOL FABRICATION

Level: First Period Apprenticeship

Prerequisite: PLA3436: Welding Safety and Fabrication

Description: Students fabricate a bracket project and a spool project to demonstrate an understanding of how to weld.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

1. use oxyfuel and arc welding equipment

- 1.1 build a bracket project
- 1.2 build a spool project

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3446: BRAZING AND SOLDERING

Level: First Period Apprenticeship

Prerequisite: PLA3436: Welding Safety and Fabrication

Description: Students develop and demonstrate an understanding of brazing and soldering metal alloys.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

1. braze and solder metal alloys

- 1.1 identify applications of brazed and soldered joints
- 1.2 identify equipment and materials required to braze and solder
- 1.3 describe brazing and soldering procedures
- 1.4 assemble and test an assigned project

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3451: SKETCHING AND DRAWING

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students develop an understanding of drafting and the use of single-line drawings. Students demonstrate orthographic drawing and isometric single-line drawing.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

1. apply sketching and drawing concepts

- 1.1 identify the types of drafting equipment
- 1.2 explain the use of drafting equipment
- 1.3 identify the types of drafting lines found on a drawing
- 1.4 identify the three views of an orthographic projection
- 1.5 draw and label the three views of an orthographic drawing

2. develop single-line pipe drawings

- 2.1 identify piping symbols
- 2.2 draw and label orthographic single-line drawings
- 2.3 draw and label isometric single-line piping drawings

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

- 4.1 identify short-term and long-term goals
- 4.2 identify steps to achieve goals

COURSE PLA3456: INTERPRETING DRAWINGS

Level: First Period Apprenticeship

Prerequisite: PLA3451: Sketching and Drawing

Description: Students interpret architectural drawings and mechanical drawings used in the plumbing trade.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

1. interpret drawings

- 1.1 identify the views of a drawing
- 1.2 explain the usage of scales
- 1.3 calculate dimensions using imperial scales and metric scales
- 1.4 describe symbols found on a drawing
- 1.5 identify the five divisions of a drawing package
- 1.6 describe the purpose of drawing divisions
- 1.7 identify architectural drawings and mechanical drawings

2. demonstrate basic competencies

- 2.1 demonstrate fundamental skills to:
 - 2.1.1 communicate
 - 2.1.2 manage information
 - 2.1.3 use numbers
 - 2.1.4 think and solve problems
- 2.2 demonstrate personal management skills to:
 - 2.2.1 demonstrate positive attitudes and behaviours
 - 2.2.2 be responsible
 - 2.2.3 be adaptable
 - 2.2.4 learn continuously
 - 2.2.5 work safely
- 2.3 demonstrate teamwork skills to:
 - 2.3.1 work with others
 - 2.3.2 participate in projects and tasks

3. create a transitional strategy to accommodate personal changes and build personal values

- 3.1 identify short-term and long-term goals
- 3.2 identify steps to achieve goals

COURSE PLA3461: PLUMBING CALCULATIONS

Level: First Period Apprenticeship

Prerequisite: PLA3900: Apprenticeship Safety

Description: Students identify and demonstrate basic mathematic calculations used in the plumbing trade.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

- 1. apply mathematical skills using both metric measurements and imperial measurements**
 - 1.1 perform arithmetic calculations using whole numbers, fractions, and decimals
 - 1.2 describe the metric and imperial measurement systems
 - 1.3 describe the operation of the AIT calculator, which is provided to students for exams administered by AIT
 - 1.4 perform number conversions using whole numbers, fractions, and decimals
 - 1.5 perform measurement conversions using whole numbers, fractions, and decimals
- 2. solve mathematical problems involving perimeter, areas, percentage, and grade**
 - 2.1 identify concepts used when working with formulas
 - 2.2 apply formulas for calculating perimeters of rectangles, triangles, and circles
 - 2.3 apply formulas for calculating the surface area of regular-shaped solids, tanks, and cylinders
 - 2.4 apply the formula for calculating percentages
 - 2.5 calculate grades in percentage, fractions, and ratio
- 3. calculate volumetric capacities for tanks and cylinders**
 - 3.1 apply formulas for calculating volumes of regular-shaped solids, tanks, and cylinders
 - 3.2 calculate the capacity of regular-shaped tanks and cylinders using both metric values and imperial values
- 4. demonstrate basic competencies**
 - 4.1 demonstrate fundamental skills to:
 - 4.1.1 communicate
 - 4.1.2 manage information
 - 4.1.3 use numbers
 - 4.1.4 think and solve problems
 - 4.2 demonstrate personal management skills to:
 - 4.2.1 demonstrate positive attitudes and behaviours
 - 4.2.2 be responsible
 - 4.2.3 be adaptable
 - 4.2.4 learn continuously
 - 4.2.5 work safely
 - 4.3 demonstrate teamwork skills to:
 - 4.3.1 work with others
 - 4.3.2 participate in projects and tasks
- 5. create a transitional strategy to accommodate personal changes and build personal values**
 - 5.1 identify short-term and long-term goals
 - 5.2 identify steps to achieve goals

COURSE PLA3466: PIPING OFFSETS AND DENSITY

Level: First Period Apprenticeship

Prerequisite: PLA3461: Plumbing Calculations

Description: Students describe and demonstrate piping offset and density calculations used in the plumbing trade.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journeyperson certification in the plumbing trade.

Outcomes: The student will:

- 1. calculate 45° and 90° offsets for piping systems**
 - 1.1 calculate offsets for right angle triangles
 - 1.2 apply formulas for 45° and 90° offsets
 - 1.3 calculate offset dimensions around an object
- 2. calculate mass, volumes, densities, and relative densities**
 - 2.1 define the terms matter, element, compound, and mixture
 - 2.2 describe the three common states of matter
 - 2.3 define the terms adhesion, cohesion, surface tension, and capillarity
 - 2.4 calculate density, mass, and volume of substances
 - 2.5 calculate mass and density using relative densities
- 3. demonstrate basic competencies**
 - 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
 - 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
 - 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks
- 4. create a transitional strategy to accommodate personal changes and build personal values**
 - 4.1 identify short-term and long-term goals
 - 4.2 identify steps to achieve goals

COURSE PLA3471: PRINCIPLES OF PRESSURE, ATMOSPHERE, AND ELECTRICITY

Level: First Period Apprenticeship

Prerequisite: PLA3466: Piping Offsets and Density

Description: Students understand and apply the principles of pressure, atmosphere, and electricity used in the plumbing trade. Students calculate pressures and perform electrical calculations.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

- 1. calculate pressures in metric values and imperial values**
 - 1.1 define pressure and force
 - 1.2 state the six principles of hydrostatics
 - 1.3 define pressure constants used for calculating pressures
 - 1.4 perform pressure and force calculations in both metric units and imperial units
 - 1.5 describe atmospheric pressure and the effect of altitude
 - 1.6 perform calculations to convert absolute, gauge, and mercury pressures
- 2. perform electrical calculations**
 - 2.1 identify principles of electricity, including direct current and alternating current flow, electrolysis, and electromagnetism
 - 2.2 sketch series and parallel electrical circuits
 - 2.3 perform calculations using Ohm's law
- 3. demonstrate basic competencies**
 - 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
 - 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
 - 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks
- 4. create a transitional strategy to accommodate personal changes and build personal values**
 - 4.1 identify short-term and long-term goals
 - 4.2 identify steps to achieve goals

COURSE PLA3480: PLA PRACTICUM A

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums, and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journey person certification or an experienced professional with journey person certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
 - 1.1 identify regulations and regulatory bodies related to the credential
 - 1.2 describe personal roles and responsibilities, including:
 - 1.2.1 key responsibilities
 - 1.2.2 support functions/responsibilities
 - 1.2.3 code of ethics
 - 1.3 describe personal work responsibilities and categorize them as:
 - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
 - 1.3.2 non-routine tasks; e.g., emergencies
 - 1.3.3 tasks requiring personal judgement
 - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
 - 2.1 evaluate application of competencies developed in related CTS courses
 - 2.2 evaluate standards of performance in terms of:
 - 2.2.1 quality of work
 - 2.2.2 quantity of work
 - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
 - 2.4 evaluate the work environment in terms of:
 - 2.4.1 location
 - 2.4.2 floor plan of work area
 - 2.4.3 analysis of workflow patterns

- 2.5 evaluate a professional in a related occupation in terms of:
 - 2.5.1 training and certification
 - 2.5.2 interpersonal skills
 - 2.5.3 technical skills
 - 2.5.4 professional ethics

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

COURSE PLA3485: PLA PRACTICUM B

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums, and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journey person certification or an experienced professional with journey person certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
 - 1.1 identify regulations and regulatory bodies related to the credential
 - 1.2 describe personal roles and responsibilities, including:
 - 1.2.1 key responsibilities
 - 1.2.2 support functions/responsibilities
 - 1.2.3 code of ethics
 - 1.3 describe personal work responsibilities and categorize them as:
 - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
 - 1.3.2 non-routine tasks; e.g., emergencies
 - 1.3.3 tasks requiring personal judgement
 - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
 - 2.1 evaluate application of competencies developed in related CTS courses
 - 2.2 evaluate standards of performance in terms of:
 - 2.2.1 quality of work
 - 2.2.2 quantity of work
 - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
 - 2.4 evaluate the work environment in terms of:
 - 2.4.1 location
 - 2.4.2 floor plan of work area
 - 2.4.3 analysis of workflow patterns

- 2.5 evaluate a professional in a related occupation in terms of:
 - 2.5.1 training and certification
 - 2.5.2 interpersonal skills
 - 2.5.3 technical skills
 - 2.5.4 professional ethics

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

COURSE PLA3490: PLA PRACTICUM C

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums, and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journey person certification or an experienced professional with journey person certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
 - 1.1 identify regulations and regulatory bodies related to the credential
 - 1.2 describe personal roles and responsibilities, including:
 - 1.2.1 key responsibilities
 - 1.2.2 support functions/responsibilities
 - 1.2.3 code of ethics
 - 1.3 describe personal work responsibilities and categorize them as:
 - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
 - 1.3.2 non-routine tasks; e.g., emergencies
 - 1.3.3 tasks requiring personal judgement
 - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
 - 2.1 evaluate application of competencies developed in related CTS courses
 - 2.2 evaluate standards of performance in terms of:
 - 2.2.1 quality of work
 - 2.2.2 quantity of work
 - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
 - 2.4 evaluate the work environment in terms of:
 - 2.4.1 location
 - 2.4.2 floor plan of work area
 - 2.4.3 analysis of workflow patterns

- 2.5 evaluate a professional in a related occupation in terms of:
 - 2.5.1 training and certification
 - 2.5.2 interpersonal skills
 - 2.5.3 technical skills
 - 2.5.4 professional ethics

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

COURSE PLA3495: PLA PRACTICUM D

Level: First Period Apprenticeship

Prerequisite: None

Description: Students, on the work site, continue to develop and refine those competencies developed in related Career and Technology Studies (CTS) occupational areas, previous practicums, and other experiences.

Parameters: This course should be accessed only by students continuing to work toward attaining a recognized credential offered by an agency external to the school. Practicum courses extend the competencies developed in related CTS occupational areas. The practicum courses may not be delivered as stand-alone courses and may not be combined with core courses. This course may not be used in conjunction with Registered Apprenticeship Program courses. This practicum course may be delivered on- or off-campus. Instruction must be delivered by a qualified teacher with journey person certification or an experienced professional with journey person certification, who is under the supervision of the qualified teacher; both must be authorized to supervise trainees for the external credential.

Outcomes: The student will:

1. **perform assigned tasks and responsibilities efficiently and effectively, as required by the agency granting credentials**
 - 1.1 identify regulations and regulatory bodies related to the credential
 - 1.2 describe personal roles and responsibilities, including:
 - 1.2.1 key responsibilities
 - 1.2.2 support functions/responsibilities
 - 1.2.3 code of ethics
 - 1.3 describe personal work responsibilities and categorize them as:
 - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
 - 1.3.2 non-routine tasks; e.g., emergencies
 - 1.3.3 tasks requiring personal judgement
 - 1.3.4 tasks requiring approval of a supervisor
2. **analyze personal performance in relation to established standards**
 - 2.1 evaluate application of competencies developed in related CTS courses
 - 2.2 evaluate standards of performance in terms of:
 - 2.2.1 quality of work
 - 2.2.2 quantity of work
 - 2.3 evaluate adherence to workplace policies and procedures related to health and safety
 - 2.4 evaluate the work environment in terms of:
 - 2.4.1 location
 - 2.4.2 floor plan of work area
 - 2.4.3 analysis of workflow patterns

- 2.5 evaluate a professional in a related occupation in terms of:
 - 2.5.1 training and certification
 - 2.5.2 interpersonal skills
 - 2.5.3 technical skills
 - 2.5.4 professional ethics

3. demonstrate basic competencies

- 3.1 demonstrate fundamental skills to:
 - 3.1.1 communicate
 - 3.1.2 manage information
 - 3.1.3 use numbers
 - 3.1.4 think and solve problems
- 3.2 demonstrate personal management skills to:
 - 3.2.1 demonstrate positive attitudes and behaviours
 - 3.2.2 be responsible
 - 3.2.3 be adaptable
 - 3.2.4 learn continuously
 - 3.2.5 work safely
- 3.3 demonstrate teamwork skills to:
 - 3.3.1 work with others
 - 3.3.2 participate in projects and tasks

COURSE PLA3900: APPRENTICESHIP SAFETY

Level: First Period Apprenticeship

Prerequisite: None

Description: Students develop the knowledge and skills required to maintain a personal health and safety plan; identify the steps for obtaining a journey person certificate; and describe how to apply legislation, regulations, and practices of the industry. Students also learn to use the codes and standards that are applied in the pipe trades.

Parameters: Access to a materials work centre, complete with basic plumbing tools and materials, and to instruction from an individual with journey person certification in the plumbing trade.

Outcomes: The student will:

1. apply legislation, regulations, and practices ensuring safe work in the plumbing trade

- 1.1 demonstrate the application of the *Occupational Health and Safety Act, Regulation, and Code*
- 1.2 describe the employer's and employee's role with Occupational Health and Safety (OH&S) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers' Compensation Board regulations, and related advisory bodies and agencies
- 1.3 describe Alberta's *Public Health Act* and the Personal Services Regulation as it pertains to the plumbing industry
- 1.4 describe industry practices for hazard assessment and control procedures
- 1.5 describe the responsibilities of workers and employers to apply emergency procedures
- 1.6 describe tradesperson attitudes with respect to housekeeping, personal protective equipment (PPE), and emergency procedures
- 1.7 describe the roles and responsibilities of employers and employees with the selection and use of PPE
- 1.8 select, use, and maintain appropriate PPE for worksite applications
- 1.9 use required PPE for tasks

2. use industry standard practices for climbing, lifting, rigging, and hoisting in the plumbing trade

- 2.1 describe manual lifting procedures
- 2.2 describe rigging hardware and associated safety factors
- 2.3 describe industry-related body mechanics
- 2.4 select equipment for rigging loads
- 2.5 describe hoisting and load moving procedures
- 2.6 maintain PPE for climbing, lifting, and load moving equipment
- 2.7 practise workplace ergonomics
- 2.8 use PPE for climbing, lifting, and load moving equipment

3. apply industry standard practices for hazardous materials and fire protection in the plumbing trade

- 3.1 describe roles, responsibilities, features, and practices related to the WHMIS program
- 3.2 describe three key elements of WHMIS
- 3.3 describe handling, storing, and transporting procedures for hazardous material

- 3.4 describe venting procedures when working with hazardous materials
- 3.5 describe hazards, classes, procedures, and equipment related to fire protection
- 4. manage an apprenticeship to earn journeyperson certification**
 - 4.1 describe the contractual responsibilities of the apprentice, employer, and Alberta Apprenticeship and Industry Training
 - 4.2 describe the purpose of the apprentice record book
 - 4.3 describe the procedure for changing employers during an active apprenticeship
 - 4.4 describe the purpose of the course outline
 - 4.5 describe the procedure for progressing through an apprenticeship
 - 4.6 describe advancement opportunities in this trade
- 5. use codes and standards that are applied in the pipe trades**
 - 5.1 identify code documents relating to pipe trades, including ASME/ABSA, CSA, NRC, NFPA, and ASHRAE
 - 5.2 explain the applicable codes and standards and which body governs the code or standard
 - 5.3 describe the procedures for the acceptance of the codes by the provinces and the local authorities
- 6. apply arc flash safety and lockout and tagout on a jobsite**
 - 6.1 identify safe-work practices to protect from arc flash hazards
 - 6.2 describe lockout and tagout procedures
 - 6.3 identify safe-work practices to prevent electrical shock
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals