**Plumbing Techniques Curriculum Renewal**

**Curriculum Renewal: Analysis and Action Plan Template for 2013**

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| **A. Analysis of Indicators**Note: Summary Data is **not** recorded in this section of the template. Please attach summary.**Reflect on, and discuss, the following indicators in the context of the curriculum and program:**  |
| **1. Industry / Sector Trends**1.1 New or emergent industry or sector related issues and trends identified over the past year and their potential impact on the program.Two new Nuclear Plants at Darlington will increase demand for Plumbers in this area. Funding being provided to Clean up the Waterfront and contaminated soil in Port Hope will increase demand for Plumbing in this area as well.* 1. Advisory Committee recommendations from the past year that will affect the positioning, nature, or scope of the program.

Coordinator is in the process of setting up a new PAC and hopes to have this meeting in the Fall 2012-Need community support for the introduction of field placements for students in the program.At Contractors Breakfast concerns were noted about Plumbers needing further training in Gas and Oil certifications. Plumbing Coordinator will meet with HRAC Coordinator to design a pathway for Plumbing techniques students to acquire G-3 and OBT-3 certification. This will increase demand for program as well.1.3 Information / observations generated via faculty and staff professional development, engagement in sectoral and profession associations, and involvement in community and employer networks connected to the field.There is a significant demand for plumbers in the industry and there appears to be very few colleges running this program. According to enrolment trends, Fleming may choose to grow this certificate program. Fleming did achieve a healthy intake in its first year’s offering with 30 registered students. (Noting that student demand across the system for fall registration has a median of 24 students). Plumbing as a certificate program for OCAS purposes is grouped under either Plumbing Techniques or Mechanical Techniques. This cluster of programs has grown by over 868.8% since 2008 (300.6% growth Mean) as per Enrolment Growth Plan. |
| **2. Curriculum Development**2.1 Curriculum changes in the last year such as changes in program positioning, course content, course / program outcomes, and delivery mode.  Refer to Course Outline Review Summary Sheet and new curriculum model. The program has undergone numerous changes and will now be offered over four seven week segments in Jan 2013. The program model for Sept 2012 will be offered over a compressed 15 week segment with noted concerns. 2.2 Recent or anticipated initiatives that promote student pathways including high school articulations, program laddering, and university transfer / articulations.Enrolments for all Apprenticeship have declined in 2009/10 by (-18%) however there were 850 registrations, which is one of the highest number of registrations of all apprenticeship trades. With the anticipated demand, Fleming is currently investigating the possibility of applying for TDA status for Pluming Apprenticeship. The Coordinator is currently in the process of gathering letters of support2.3 New competitor programs and/or re-positioning of existing programs.St Clair has recently launched a Plumbing Techniques Program with 46 students in 2011. There are several college that offer Mechanical Techniques Program. Overall across the system this program has experienced a 6% increase. Currently there is only one college LaCite that offers a Plumbing Technician Program2.4 New or changing provincial standards, standards for accreditation, credentials, and / or industry or sector certifications over the past year.  Community partners have indicated that it would be helpful for students to acquire training in Gas and Oil2.5 Progress made from the last curriculum renewal initiative. There is no previous renewal document on file.**An updated curriculum map should be submitted with this document. This has been submitted to CLT and revised map will be done in the fall to reflect new program model to be introduced in Jan 2013.** |
| **3. Student and Graduate Satisfaction**3.1 Key performance indicators # 4, 8, 9, and 11 (see **Appendix C** for a description of these).Currently there are no KPIs for this program3.2 Student Focus Group SummaryCoordinator has asked the Student Advisor to informally conduct a Student Focus Group. Students expressed a concern with the Health and Safety course; material was dated. Concerns noted in the Managing Projects-felt that the course was essentially the same as Business Concepts, Students indicated that would like more applied learning and less theory in Plumbing related courses. Students indicated that having the renewable courses (Solar and Water Systems) was an added benefit to this program. These concerns have contributed to the changes in the new curriculum model for Jan 20133.3 Student TestimonialsCompressed 15 week format is too difficult. Community partners and students both have indicated that a more comprehensive program with course held over a 25-30 week semester system would be more beneficial that having a compressed 15 week program. 3.4 Program Award/RecognitionMilwaki Tools has indicated that they would be interested in supporting awards for all of the trades’ courses. Coordinator will schedule a meeting to explore this for the next graduating class. |
| **4. Employment Trends** 4.1 New or changing employment trends in the industry or sector.Employment projections are rated ‘good’ according to Employment Ontario and the Construction Sector Council (CSC) rates are quite strong until 2019 with 94% of job seekers being school leavers. CSC is predicting a large # of positions to become available until 2019 in Central ON (647 positions)Locally with the two new nuclear plants being built, there will be excellent demand for plumbers and all trades in the area. 4.2 Curriculum issues / strengths that have been identified by employers pertaining to graduate job readiness.Employers indicated a need for Fleming to secure the TDA status for Plumbing as well as pathways for students to pursue Gal and Oil certifications. |

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| **Program: Plumbing Techniques Program­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­ Co-ordinator: Gord Knox** **Date: June 2012** |
| **B. Curriculum Strengths and Challenges** Summarize the curriculum strengths and challenges identified by the team.  |
| * Some of the challenges for the Plumbing program include: there have been a series of changes made to the delivery and the curriculum model since the original launch; there has not been a full-time faculty dedicated to the program and there has been no PAC in the past year
* Curriculum Delivery Model for Sept 2012 has the program being condensed to fit a 15 week semester and a four week field placement has been introduced to replace the applied project that previously was a part of the program. Decision to reduce the number of hours in the program has raised concerns for faculty in the program because these changes do not permit students to have enough lab time for practical learning activities and concerns are noted by employers being willing to take students on site for a four week field placement.
* Faculty are currently undergoing a program renewal and it has become clear that this program needs to move from a 15 week program to a 21 week program in order to meet the program outcomes. With a semester and a half program model, students will be permitted to engage in practical applied projects and be more prepared for field placements.
* Faculty in the Plumbing program are dedicated to students and strengthening partnerships with the community. A Contractors Breakfast has been organized in order to raise awareness about the Plumbing program and to strengthen ties with Employers for field placement.
* Faculty teaching in the program are currently attempting to gather letters of support for the application of TDA status for Plumbing Apprenticeship.
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| **C. Action Plan**Identify priority actions for the next year and the rationale for their inclusion. For each, indicate the project lead, and the proposed timelines for completion. Refer to: Course Outline Review Summary Sheet. (Attach summary at the end)  |
| * **New curriculum model has been developed for the Plumbing Program to be implemented for the September of 2013 intake-See appendix Dean is currently in the process of applying for the TDA status for PlumbingSchedule a PAC for the Fall 2012**
* **Align all course to the most recent program standards that have been approved by the CVS**
* Revised standards approved by the Ministry include :
1. Complete all work in compliance with current legislation, standards, regulations quality assurance procedures and provincial plumbing guidelines in order to contribute to safety of self and others.
2. Trouble shoot and solve basic installation problems related to the plumbing industry by applying mathematics and a variety of systematic approaches.
3. Apply sustainability practices used in the plumbing industry
4. Use current and emerging technologies to support the implementation of mechanical and manufacturing systems.
5. Perform basic technical measurements using appropriate plumbing tools and practices.
6. Use tools and equipment for the installation of plumbing and piping systems, manufacturing and repair of mechanical components according to safety procedures used within the plumbing industry.
7. Interpret and produce basic drawings and sketches necessary for the installation, maintenance, and repair of plumbing systems.
8. Manufacture, assemble, maintain and repair mechanical components according to required specifications.
9. Identify, select, and assemble various piping and plumbing systems in compliance with established plumbing codes, standards and regulations.
10. Work independently as well as on a team with diverse groups of people and a variety of trades.
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| **D. Deferred Actions**Record any issues that will need to bemonitored, researched, or deferred for future action. |
| * **Create a new pathway between Plumbing and HRAC so that students may also acquire certification in G-3 and OBT-3**
* **Create a new pathway between Plumbing program & Trade Fundamentals**
* **Launch apprenticeship pathway for Plumbing**
* **Engage community for ideas on possible Con Ed offerings for Plumbers**
* **Coordinator would like to research demand for possible Steam Fitting apprenticeship in the future.**
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### Course Outline Review Summary Sheet for Plumbing Techniques

**Program Name: Date:**

1. There is congruency between the course learning requirements, and the program learning outcomes.
2. There is a match between course learning requirements, course learning activities and learning resources.
3. Learning methods are published and are matched to the learning requirements.
4. Evaluation methods allow students to demonstrate the course learning requirements.
5. PLAR opportunities exist and are based on course learning requirements.

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| **Course Name and Number** |  | **Criteria (see Course Outline review chart)** | **Comments – particular strengths to be recognized or recommendations for changes needing to be made** |
|  | **1** | **2** | **3** | **4** | **5** |
| MECH 203 | Plumbing Systems Theory I  |  |  |  |  |  |  |
| MECH 201 | Applied Tools and Piping Methods I | x | x | x | x | x |  |
| MATH109 | Trade Calculations  |  |  |  |  |  |  |
| CNST151  | Health and Safety Theory  |  |  |  |  |  |  |
| CNST 152 |  Health and Safety Applied Applications  |  |  |  |  |  |  |
| NEW | Prints and Drafting |  |  |  |  |  |  |
| GENED101 | Preparing for a Career in Skilled Trades |  |  |  |  |  |  |
| COMP287 | Computer Applications |  |  |  |  |  |  |
| COMM 166 | Communications |  |  |  |  |  |  |
| MECH 229 | Plumbing Systems Theory II  |  |  |  |  |  |  |
| MECH 230 | Applied Tools and Piping Methods II  |  |  |  |  |  |  |
| MECH 205 |  Plumbing Fixtures, Installation and Service  |  |  |  |  |  |  |
| MECH 202 | Plumbing Prints and Drafting  |  |  |  |  |  |  |
| MECH 204 | Welding for Plumbers  |  |  |  |  |  |  |
| MECH 206 | Plumbing Codes, Regulations, and Standards |  |  |  |  |  |  |
| MECH 207 | Water Systems & Renewable Energy Sources for Plumbing |  |  |  |  |  |  |

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**CREDENTIALS VALIDATION SERVICE**

**APPLICATION FOR PROGRAM VALIDATION J**

**This proposal will be sent to MTCU for Approval for Funding X Yes \_\_\_\_\_ No**

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| **1. College: Sir Sandford Fleming College** |
| **2. College contact person responsible for this proposal:** **Name: Trudy A. Heffernan** **Title: Director, Centre for Learning and Teaching** **Telephone: (705) 749-5520 ext. 1322** **Electronic mail:** **theffern@flemingc.on.ca** |
| **3. Proposed Program Title: Mechanical Techniques - Plumbing** |
| **4. Proposed Credential:** (please indicate below) Local Board Approved Certificate 🞏 **Ontario College Certificate X** Ontario College Diploma 🞏 Ontario College Advanced Diploma 🞏 Ontario College Graduate Certificate 🞏 |
| **5. Proposed Program Outcomes:** Please complete and attach the two Program Maps (Appendix A - Form 1 and Form 2) |
| **6. Proposed Program Description:**Please complete and attach the Program Description Form (Appendix B) |
| **7. Proposed Program Curriculum:** Please complete and attach the Program Curriculum Form (Appendix C) |
| **8. Proposed Program Certification/Accreditation:** Please complete and attach the Regulatory Status Form (Appendix D) |
| **9. Date of Submission:**  |
| **10. Date of CVS Response:** |
| **11. Validation Decision:** 🞏 Proposal Validated (APS Number: ) 🞏 Proposal not Validated. Reason: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**Signed on behalf of CVS:** |

Send the completed form and required appendices to: klassen@ocqas.org . For detailed information on how to complete the Application for Program Validation, please refer to the Instructions for Submission document. For any additional information contact: College Credential Validation Service, 655 Bay Street, Suite 1010, Toronto, ON M5G 2K4; or by telephone at (416) 596-8799.

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| **PROVINCIAL PROGRAM STANDARD VOCATIONAL LEARNING OUTCOMES / PROVINCIAL PROGRAM DESCRIPTION OUTCOMES (MTCU code 41007 )** | **PROPOSED PROGRAM VOCATIONAL LEARNING OUTCOMES** | **COURSE TITLE / COURSE CODE** (From Appendix C) |
| --- | --- | --- |
| Complete all work in compliance with current legislation, standards, regulations and guidelines. Comply with current health and safety legislation, as well as organizational practices and procedures.Contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements | 1. Complete all work in compliance with current legislation, standards, regulations quality assurance procedures and provincial plumbing guidelines in order to contribute to safety of self and others.
 | MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods ICNST152 Health and Safety Applied Applications\*\*CNST151 Health and Safety Theory\*\*NEW Plumbing Codes and RegulationsMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing  |
| Troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics.  | 1. Trouble shoot and solve basic installation problems related to the plumbing industry by applying mathematics and a variety of systematic approaches.
 | MECH201 Applied Tool and Piping Methods IMATH109 Trade Calculations CNST152 Health and Safety Applied Applications\*\*CNST151 Health and Safety Theory\*\*MECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods II |
| Support sustainability\* best practices in workplaces.  | 1. Apply sustainability practices used in the plumbing industry
 | MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods INEW Plumbing Codes and RegulationsMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IIMECH204 Welding for PlumbersNEW Water Systems & Renewable Energy Sources for Plumbing |
| Use current and emerging technologies\* to support the implementation of mechanical and manufacturing projects. | 1. Use current and emerging technologies to support the implementation of mechanical and manufacturing systems.
 | MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods INEW Prints & Drafting \*\*NEW Plumbing Codes and RegulationsMECH202 Plumbing Prints and DraftingMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IIMECH204 Welding for PlumbersNEW Water Systems & Renewable Energy Sources for Plumbing |
| Perform routine technical measurements accurately using appropriate instruments and equipment.  | 1. Perform basic technical measurements using appropriate plumbing tools and practices.
 | MECH201 Applied Tool and Piping Methods IMATH109 Trade Calculations NEW Prints & Drafting NEW Plumbing Codes and RegulationsMECH202 Plumbing Prints and DraftingMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IIMECH204 Welding for PlumbersNEW Water Systems & Renewable Energy Sources for Plumbing |
| Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components | 1. Use tools and equipment for the installation of plumbing and piping systems, manufacturing and repair of mechanical components according to safety procedures used within the plumbing industry.
 | MECH201 Applied Tool and Piping Methods IMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
| Contribute to the interpretation and preparation of mechanical drawings and other related technical documents.  | 1. Interpret and produce basic drawings and sketches necessary for the installation, maintenance, and repair of plumbing systems.
 | MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods INEW Prints & Drafting \*\*NEW Plumbing Codes and RegulationsMECH202 Plumbing Prints and DraftingMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
| Assist in manufacturing, assembling, maintaining and repairing mechanical components according to required specifications. | 1. Manufacture, assemble, maintain and repair mechanical components according to required specifications.
 | MECH201 Applied Tool and Piping Methods IMECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
|  | 1. Identify, select, and assemble various piping and plumbing systems in compliance with established plumbing codes, standards and regulations.
 | MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods INEW Plumbing Codes and RegulationsMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
|  | 1. Work independently as well as on a team with diverse groups of people and a variety of trades.
 | MECH201 Applied Tool and Piping Methods IGNED101 Preparing for a Career in Skilled Trades\* \*\*MECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods II |

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**APPENDIX A - PROGRAM MAPS**

**Form 2 - Essential Employability Skills Outcomes**

| **SKILL CATEGORIES** | **DEFINING SKILLS****Skill areas to be demonstrated by the graduates** | **ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES****The graduate has reliably demonstrated the ability to:** | **COURSE TITLE / COURSE CODE** (From Appendix C) |
| --- | --- | --- | --- |
| **COMMUNICATION** | * Reading
* Writing
* Speaking
* Listening
* Presenting
* Visual Literacy
 | * communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience
 | COMM 166 Communications for Skilled Trades MECH203 Plumbing Systems Theory IGNED101 Preparing for a Career in Skilled TradesCNST151 Health and Safety TheoryCOMP287 Computer ApplicationsNEW Prints & Drafting MECH202 Plumbing Prints and DraftingMECH 229 Plumbing Systems Theory II |
| * respond to written, spoken, or visual messages in a manner that ensures effective communication
 | COMM 166 Communications for Skilled Trades GNED101 Preparing for a Career in Skilled TradesCOMP287 Computer ApplicationsNEW Prints & Drafting MECH202 Plumbing Prints and DraftingMECH 229 Plumbing Systems Theory II*MECH 205 Plumbing Fixtures, Installation and Service*  |
| **NUMERACY** | * Understanding and applying mathematical concepts and reasoning
* Analysing and using numerical data
* Conceptualizing
 | * execute mathematical operations accurately
 | MATH109 Trade Calculations MECH 205 Plumbing Fixtures, Installation and Service GNED101 Preparing for a Career in Skilled Trades |
| **CRITICAL THINKING & PROBLEM SOLVING** | * Analysing
* Synthesizing
* Evaluating
* Decision-making
* Creative and innovative thinking
 | * apply a systematic approach to solve problems
 | MATH109 Trade Calculations COMP287 Computer ApplicationsCNST152 Health and Safety Applied ApplicationsMECH 205 Plumbing Fixtures, Installation and Service NEW Water Systems & Renewable Energy Sources for Plumbing |
| * use a variety of thinking skills to anticipate and solve problems
 | MECH201 Applied Tool and Piping Methods IMATH109 Trade Calculations COMP287 Computer ApplicationsCNST152 Health and Safety Applied ApplicationsMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
| **INFORMATION MANAGEMENT** | * Gathering and managing information
* Selecting and using appropriate tools and technology for a task or a project
* Computer literacy
* Internet skills
 | * locate, select, organize, and document information using appropriate technology and information systems
 | COMM 166 Communications for Skilled Trades COMP287 Computer ApplicationsNEW Plumbing Codes and Regulations |
| * analyse, evaluate, and apply relevant information from a variety of sources
 | COMM 166 Communications for Skilled Trades MECH203 Plumbing Systems Theory IMECH201 Applied Tool and Piping Methods IMATH109 Trade Calculations COMP287 Computer ApplicationsNEW Prints & Drafting CNST152 Health and Safety Applied ApplicationsCNST151 Health and Safety TheoryNEW Plumbing Codes and RegulationsMECH202 Plumbing Prints and DraftingMECH 229 Plumbing Systems Theory IIMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods IINEW Water Systems & Renewable Energy Sources for Plumbing |
| **INTER-PERSONAL** | * Team work
* Relationship management
* Conflict resolution
* Leadership
* Networking
 | * show respect for the diverse opinions, values, belief systems, and contributions of others
 | COMM 166 Communications for Skilled Trades GNED101 Preparing for a Career in Skilled TradesMECH 205 Plumbing Fixtures, Installation and Service CNST152 Health and Safety Applied ApplicationsCNST151 Health and Safety Theory |
| * interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals
 | COMM 166 Communications for Skilled Trades MECH201 Applied Tool and Piping Methods IGNED101 Preparing for a Career in Skilled TradesMECH 205 Plumbing Fixtures, Installation and Service MECH 230 Applied Tool and Piping Methods II |
| **PERSONAL** | * Managing self
* Managing change and being flexible and adaptable
* Engaging in reflective practices
* Demonstrating personal responsibility
 | * manage the use of time and other resources to complete projects
 | COMM 166 Communications for Skilled Trades GNED101 Preparing for a Career in Skilled TradesCNST152 Health and Safety Applied ApplicationsCNST151 Health and Safety Theory |
| * take responsibility for one’s own actions, decisions, and consequences
 | COMM 166 Communications for Skilled Trades GNED101 Preparing for a Career in Skilled TradesCNST152 Health and Safety Applied ApplicationsCNST151 Health and Safety Theory |

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**APPENDIX B - PROGRAM DESCRIPTION**

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| **PROGRAM DESCRIPTION:** (including occupational areas where it is anticipated graduates will find employment)The Mechanical Techniques – Plumbing program will provide students with a variety of trade-specific skills, introducing them to installing, maintaining and repairing piping systems in residential and commercial settings. Students will learn to interpret blueprints, install valves and fittings, join and secure sections of pipe and test pipe systems. Students will develop competencies in venting, waste and drainage systems. Students will also explore the interaction of alternative energy sources with residential plumbing systems. Graduates of the Mechanical Techniques-Plumbing program will be able to obtain entry level employment with plumbing contractors in new construction, renovations, service or repair sectors. Other opportunities include jobs with drinking water treatment / waste water service industries, or with companies that provide hot water-based (solar/geothermal) alternate energy solutions |
| **VOCATIONAL PROGRAM LEARNING OUTCOMES:** (vocational program learning outcomes must be consistent with the requirements of the Credentials Framework for the proposed credential)***The graduate has reliably demonstrated the ability to*:**1. Complete all work in compliance with current legislation, standards, regulations quality assurance procedures and provincial plumbing guidelines in order to contribute to safety of self and others.
2. Trouble shoot and solve basic installation problems related to the plumbing industry by applying mathematics and a variety of systematic approaches.
3. Apply sustainability practices used in the plumbing industry
4. Use current and emerging technologies to support the implementation of mechanical and manufacturing systems.
5. Perform basic technical measurements using appropriate plumbing tools and practices.
6. Use tools and equipment for the installation of plumbing and piping systems, manufacturing and repair of mechanical components according to safety procedures used within the plumbing industry.
7. Interpret and produce basic drawings and sketches necessary for the installation, maintenance, and repair of plumbing systems.
8. Manufacture, assemble, maintain and repair mechanical components according to required specifications.
9. Identify, select, and assemble various piping and plumbing systems in compliance with established plumbing codes, standards and regulations.
10. Work independently as well as on a team with diverse groups of people and a variety of trades.
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| **ADMISSION REQUIREMENTS:**OSSD with the majority of credits at the Workplace (E) level, including English.When Workplace (E) is the minimum course level for admission, (C) and (U/C) courses are also accepted.If you are 19 years of age or older before classes start, and you do not possess an OSSD, you can write the Canadian Adult Achievement Test to assess your eligibility for admission. |

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**APPENDIX C - PROGRAM CURRICULUM**

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| **Semester** | **Course Code\*** | **Course Title (and brief course description)** |
| 1 | MECH 203 | **Plumbing Systems Theory I** This course introduces students to plumbing systems theory which includes pipe materials, fittings, hangars and supports. Students will learn to identify and select appropriate materials and sizes based on the application in accordance with Codes and Regulations. This course will introduce students to the Ontario Building Code related to Plumbing. Drainage, waste, and venting methods are covered in detail.Pre-requisite:Co: requisite: Health and Safety Theory & Applications, Applied Tool and Piping Methods I , Trade Calculations  |
| 1 | MECH 201 | **Applied Tools and Piping Methods I**In this hands-on practical course, safe and proper use of hand and power tools related to the plumbing trade will be emphasized. Students will learn to select and use these tools to cut, fit, and join a variety of piping materials. Students will learn to assemble piping systems and understand their applications in accordance with Codes and Regulations. Pre-requisite:Co: requisite: Health and Safety Theory & Applications, Plumbing Systems Theory I, Trade Calculations |
| 1 | MATH109 | **Trade Calculations** This course covers the basic mathematical principles required by the learner entering a trade. Topics covered include fractions, decimals, the International System of Units (S.I.) and Imperial Systems of measurement, including conversions between the systems. Measuration, ratio and proportion will also be covered. |
| 1 | CNST151  | **Health and Safety Theory** This course has been prepared for these students entering the construction trade. The course will cover current legislation (O.H.S.A.) and its application to the trades. The course has been designed to develop in the knowledge of the health hazards and safety risks that are present on the job site and to equip them with the tools required for personal protection and general safety.  |
| 1 | CNST 152 | **Health and Safety Applied Applications** This course emphasizes the safety aspects encountered on the job site. Students will obtain workplace and industry related safety certification in Fall Protection, WHMIS, and Hoisting and Rigging through active demonstration of an appropriate level of skill. |
| 1 | NEW | **Prints and Drafting**This course covers the interpretation of information found in architectural drawings such as lot plans, floor plans, elevations, and mechanical layouts. Students will learn to identify and interpret symbols used in the trades. Students will develop and practice drawing layouts and plans used in various trades. |
| 1 | GENED101 | **Preparing for a Career in Skilled Trades**This course introduces students to theories and strategies in the area of self awareness and relating to others and applying this learning to finding a job in the skilled trades field.\*General Education  |
| 1 | COMP287 | **Computer Applications**This course covers fundamental computing skills with an emphasis on word processing and spreadsheet applications as they apply to the construction trade. Students will also learn fundamental internet, e-mail and file management skills. |
| 1 | COMM 166 | **Communications**This course uses a practical, vocation-oriented approach to help students develop the communication skills that employers look for in service, technical and business environments. Students will build on their skills in reading, writing, speaking and listening in order to prepare a variety of technical documents including memos, work orders, invoices, and short, informal reports on progress and service calls. The course will focus on critical thinking and problem-solving techniques; logical organization of technical information; electronic methods of communication; and elements of clear writing, including grammar and punctuation skills. Students will refine their written and verbal communication skills through a variety of assignments, assessments and in-class practice. |
| 2 | MECH 229 | **Plumbing Systems Theory II** This course builds on the material covered in Plumbing Systems Theory I. Students will continue to learn about plumbing systems theory which includes pipe materials, fittings, hangars and supports. Students will learn to identify and select appropriate materials and sizes based on the application in accordance with Codes and Regulations. Drainage, waste, and venting methods are covered in detail.Pre-requisite: Plumbing Systems Theory I, Applied Tool and Piping Methods I , Health and Safety Theory & ApplicationsCo: requisite: Applied Tool and Piping Methods II, Codes, Regulations & Standards., & Plumbing Fixtures, Installation and Service |
| 2 | MECH 230 | **Applied Tools and Piping Methods II** In this hands-on practical course, safe and proper use of hand and power tools related to the plumbing trade will be emphasized. This course build on the material covered in Applied Tools and Piping Methods I. Students will continue to learn to select and use these tools to cut, fit, and join a variety of piping materials. Students will learn to assemble piping systems and understand their applications in accordance with Codes and Regulations. Pre-requisite: Plumbing Systems Theory I, Applied Tool and Piping Methods I , Health and Safety Theory & Applications  |
| 2 | MECH 205 | **Plumbing Fixtures, Installation and Service** This course provides students with hands on experience in the installation and servicing of residential/commercial plumbing fixtures and appliances.Pre-requisite: Plumbing Systems Theory I, Applied Tool and Piping Methods I, and Health and Safety Theory & ApplicationsCo: requisite: Plumbing Systems Theory II, Applied Tool and Piping Methods II and Codes, Regulations & Standards. |
| 2 | MECH 202 | **Plumbing Prints and Drafting** This course covers the interpretation of information found in architectural drawings such as lot plans, floor plans, elevations, and mechanical layouts. Students will learn to identify and interpret symbols relating to drains, vents, fixtures and other trade specific items. Students will develop and practice drawing plumbing layouts and drain plans.Pre-requisite: Prints and DraftingCo: requisite:  |
| 2 | MECH 204 | **Welding for Plumbers** This course covers both Oxy-Fuel (fusion) and Arc Welding (SMAW) as required by industry. The student will be able to demonstrate the safe assemble/disassemble of equipment related to oxy-fuel welding It will also covers set up, safe use and operating principles of the related equipment. Fusion welding, such as tack, butt and laying of bead on light and heavy steel in the flat position, brazing and manual flame cutting. Arc welding principles will be applied to create simply assemblies (such as support brackets) using skills acquired.  |
| 2 | New | **Plumbing Codes, Regulations, and Standards**Students will be introduced to plumbing code, regulations and standards as they relate to a variety of plumbing applications. Students will learn to reference appropriate codes to determine selection, use and methods used in the plumbing industry.Pre-requisite: Plumbing Systems Theory I, Applied Tool and Piping Methods I, Co: requisite: Plumbing Systems Theory II, Applied Tool and Piping Methods II and Plumbing Fixtures, Installation and Service. |
| 2 | New | **Water Systems & Renewable Energy Sources for Plumbing**This course is designed to introduce students to private water supply and sewage disposal systems. Students will learn the fundamentals of wells, supply pumps and the operating characteristic of septic systems. Potable water and water purification systems will also be introduced as well as procedures to avoid water contamination. In addition, students will be introduced to the emerging fields of solar hot water, hydronic, and geothermal applications as they relate to the piping trade. Other aspects of green plumbing and water efficiency systems will be explored. |

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**Curriculum Model for Plumbing Techniques Winter 2013**

Note: Each of the Segments is seven week therefore permitting the program to be aligned with the semester system.\*the red courses could be offered over two seven week blocks to align with semester system. \*\*Codes and Regulations for Plumbing could be amalgamated with the plumbing Systems Theory. Total Program Hours 602 plus 140hrs of field placement=742 hours in total. Alternatively students could take the Gas and Oil 3 certification training.

**Curriculum Model for Plumbing Techniques September 2013**