**Welding Techniques Curriculum Renewal 2012**

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

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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.  According to Application Summary Report there is an increase in enrolment for 2012 of 14.7% with a total increase in applications of 12.6%   * 1. Advisory Committee recommendations from the past year that will affect the positioning, nature, or scope of the program.   The coordinator is currently in the process of pulling together a list of stakeholders for a PAC. The goal is to have the PAC meeting in the Fall 2012.  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.  Very high % of students under age 21 (71%) vs. other similar programs in the system (56%)- most had a high-school diploma and were looking for employment skills  Need to ensure that there are very strong relationships with employers for graduating students  WTQ Level Certificate – WEAK (Fleming) STRONG (System)  Fleming’s 4 year growth since the program started in 2008 (+1.7% growth Mean) was significantly lower than the system growth (30.1% growth Mean).   * Student demand across the system has a fall 2011 registration median of 27 students   The welding techniques program is the only one in the current portfolio of programs we offer with a gap analysis rating of its KPIs which sits mainly in the middle range.   * Demand for the diploma program is about 75% less than that of the 1 year certificate program. Registrations in the diploma program declined of (-7%) in Fall 2011 whereas the certificate registrations grew 33%. |
| **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 for detailed recommendations of curriculum changes.  2.2 Recent or anticipated initiatives that promote student pathways including high school articulations, program laddering, and university transfer / articulations.  2.3 New competitor programs and/or re-positioning of existing programs.  Growth for the Welding Techniques program has been significant. There has been 33% growth overall across the entire system. Fleming has had a 5% growth in the past year. There are three new Welding Techniques programs: Algonquin, Durham and Sault have all started a WTQ program in the past year.  2.4 New or changing provincial standards, standards for accreditation, credentials, and / or industry or sector certifications over the past year.  Globalization of Industries is forcing Canada to potentially have a national accreditation for welders which involves the possibility of having a mandatory Apprenticeship, so as to gain recognition with the IIW.  2.5 Progress made from the last curriculum renewal initiative.  N/A  **An updated curriculum map should be submitted with this document.**  **See updated curriculum map** |
| **3. Student and Graduate Satisfaction**  3.1 Key performance indicators # 4, 8, 9, and 11 (see **Appendix C** for a description of these).  Section B:  3. Provides you with skills and abilities specific to your chosen career. -15.7  4. Includes topics relevant to your future success. -2.8  5. Has teachers who help you to understand your chosen career.-12.7  6. Develops your writing skills. -4.4  7. Develops your speaking skills. 1.3  8. Develops your ability to solve problems using math techniques. 2.2  9. Develops your ability to work with others. -17.8  10. Develops your ability to solve problems. -19.9  11. Develops your computer skills. 9.4  12. Provides you with opportunities to further your education after graduation. -36.9  13. Provides you with experience that will be useful to your future life outside of work. -17.1  14. OVERALL, your program is giving you knowledge and skills that will be useful in your future career. -17.4  Section C:  15. Teachers' knowledge of their subjects. –5.4  16. Teachers are up-to-date/current in their fields. -14.5  17. Teachers' presentation of the subject material. -23.3  18. Helpfulness of teachers outside of class. -16.8  19. Feedback about your progress. -10.9  20. Quality of classroom learning. -12.1  21. Quality of lab/shop learning. -4.5  22. Quality of other learning experiences.-2.8  23. Field placement, clinical experiences or co-op work terms-16.1  24. Course materials. -7.1  25. Lab/shop facilities and equipment. -22.  26. The OVERALL quality of the learning experiences in this program.-22.5  Section E:  46. The concern of people at this college for your success. -25.2  47. Your overall college experience -10.7  Coordinators goal is to improve the KPI’s by 3% each yea r in each of the categories with negative scores. Realistically hoping for significant changes in the all KPI scores with the hiring of a full time champion for the program.  3.2 Student Focus Group Summary  A Student focus group was conducted in the past year in the WTQ program. Students recommend that the program be longer in duration with more opportunities for tickets. Students expressed concerns in that the program is not covering all the material that is currently being advertised on the website. (Flux-Core)  3.3 Student Testimonials  Students have indicated that they wished that the Welding Program was longer in duration.  3.4 Program Award/Recognition  There are no current swards or other forms of recognition. |
| **4. Employment Trends**  4.1 New or changing employment trends in the industry or sector.  Canadian Occupational Projection System (COPS) rates employment opportunities to 2020 as Fair with 80% of job seekers being school leavers  Construction Sector Council (CSC) predicts growth on a relatively small base at 16% within Central Ontario (112 positions)  Visits with numerous local businesses have also highlighted a strong anticipated need for Welders in the next 3 years   1. Laser welding/cutting is said to be the emerging process for manual and robotic welding. 2. Standards for manufactured steal are changing which require higher skill levels for welders.   4.2 Curriculum issues / strengths that have been identified by employers pertaining to graduate job readiness.  In the past employers stated that graduate welders are week in blueprint reading, fabrication/fitting |
| **Program: Welding Techniques Program­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­Co-ordinator: Valentin Bostereli Date: Sept 2012** |
| **B. Curriculum Strengths and Challenges**  Summarize the curriculum strengths and challenges identified by the team. |
| * Dedicated faculty committed to the industry * Growth plans for Welding Technician Program is supported by faculty and will be presented at PAC meeting this Fall * Full time faculty has been hired and is coordinating the program |
| **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) |
| * Change layout of the welding shop so as to meet with industry standards. * Review welding processes to ensure that we are in keeping with industry standards * Implement a fabrication project into the welding program so that students become more engaged and also receive a hands on experience in blueprint reading, layout, fitting. * Create Up to date course binders to ensure quality and consistency. * Implement changes for January 2013 with the new curriculum model. * Equipment: Replacement of existing welding equipment is in keeping with KTTC plans. New space will have a welding lab of 30 students vs. the current size of 20. * Champion There is 2 strong contract faculty members who are quite engaged in the program. Space: Dedicated Welding Shop (1) available. Current daytime utilization ranges from 59% to 88% (supporting certificate program, apprenticeship and dual credit registrations |
| **D. Deferred Actions**  Record any issues that will need to bemonitored, researched, or deferred for future action. |
| * Laser Welding is coming to the fore front * IIW Standards for educating welders * Introduce a Welding Technician level program with two exit points-(1) Welding Techniques (2) Welding Technician |

### Course Outline Review Summary Sheet for WTQ

**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** |
| CNST 110  Blueprint Reading for Welders | **x** | x | √ | x | x | Course Description is accurate. Learning Outcomes need to be revised. VLOs are not accurate. Need to identify EES |
| MATH 88  Trade Calculations and Layout |  |  |  |  |  | Course review needs to happen for this course. Currently this course is used in CNS and WTQ and the hope is to create a more standardized math course for skilled trades. Fall of 2012 this will be explored. Name change to Trade Calculations. Lay out content will be put into Blue Print Reading for Welders. |
| MECH 179  Welding Fundamentals |  |  |  |  |  | Titling and course description will change. Welding Fundamentals I |
| MECH 180  Welding Processes and Practices I |  |  |  |  |  | Course description will change to Welding Processes and Practices I Course hours will increase to 150hours. |
| GNED 101  Preparing for a Career in Skilled Trades |  |  |  |  |  | This is a mandatory Gen Ed. People and Workplace Productivity will be replaced with Preparing for a Career in Skilled Trades |
| CNST 151  Health and Safety Theory |  |  |  |  |  | This is a new course that will be picked up in the welding program this year. |
| CNST 152  Health and Safety Applied Applications |  |  |  |  |  | This is a new course that will be picked up in the welding program this year. |
| COMP 370  Computer Skills in Trades |  |  |  |  |  | Course remains the same |
| MECH 181  Welding Faults and Inspection Techniques |  |  |  |  |  | This course will be discontinued and be replaced with a new Welding Fundamentals II course |
| MECH 182  Metallurgy, Electrodes and Consumables |  |  |  |  |  | This course will be discontinued and material will be put into Welding Fundamentals II- A new course Blueprint Reading for Welders II will be created. |
| MECH 183  Welding Processes and Practices II |  |  |  |  |  | Course description and hours will change. Hours were 195 and now will be 150 and spread evenly across two semesters. |
| GNED Elective |  |  |  |  |  | This program had two Gen Eds. Plan is to drop the Gen Ed choice and replace with Communications course. |

**Welding Techniques**

Total Hours: 694

**Proposed Welding Technician Program**

Welding Technician has two exit points: at the end of Semester Two (WTQ) and the end of Semester Four (WTN) Total Program Hours 1274+245=1519

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| **Course Code** | **Courses for Fall 2012** | | **New Course Name and Description for Winter 2013** |
| **Semester One** | | | |
| **BLUEPRINT READING FOR WELDERS**  CNST110 | **BLUEPRINT READING FOR WELDERS**(30)  This course will introduce students to engineering blue prints, technical drawings, welding specifications, and welding symbols utilized to detail various weld requirements. Students will interpret simple joints, line types, weld types or cuts specified in a technical drawing and use this information to setup and perform welding details.  **Prerequisites:** None. **Co-requisites:** None. | **BLUEPRINT READING FOR WELDERS** I (30)  This course will introduce students to engineering blue prints, technical drawings, welding specifications, and welding symbols utilized to detail various weld requirements. Students will interpret simple joints, line types, weld types or cuts specified in a technical drawing and use this information to setup and perform welding details.  **Prerequisites:** None. **Co-requisites:** None. | |
| **TRADE CALCULATIONS AND LAYOUT**  MATH88 | **TRADE CALCULATIONS AND LAYOUT**(45)  This course covers the basic mathematical principles and geometry skills as required by the learner entering a trade. Topics covered will include fractions, decimals, and the S.I. and imperial systems of measurement, including conversions between systems. Mensuration, Pythagorean Theorem and trade related problems will also be covered. The basic principles of geometry will include line-work, angles and triangles, quadrilaterals, circles, polygons, the ellipse and surface development.  **Prerequisites:** None. **Co-requisites:** None. | **TRADE CALCULATIONS** (45)-name change  This course covers the basic mathematical principles and geometry skills as required by the learner entering a trade. Topics covered will include fractions, decimals, and the S.I. and imperial systems of measurement, including conversions between systems. Mensuration, Pythagorean Theorem and trade related problems will also be covered. The basic principles of geometry will include line-work, angles and triangles, quadrilaterals, circles, polygons, the ellipse and surface development.  **Prerequisites:** None. **Co-requisites:** None. | |
| **WELDING FUNDAMENTALS**  MECH179 | **WELDING FUNDAMENTALS**(45)  This theoretical course will introduce students to basic welding theory, principles, processes, techniques and applications. Operating principles and safety procedures for welding processes and equipment will be studied.  **Prerequisites:** None. **Co-requisites:** None. | **WELDING FUNDAMENTALS** I (45) - Name change only  This theoretical course will introduce students to basic welding theory, principles, processes, techniques and applications. Operating principles and safety procedures for welding processes and equipment will be studied.  **Prerequisites:** None. **Co-requisites:** None. | |
| **WELDING PROCESSES AND PRACTICES I**  MECH180 | **WELDING PROCESSES AND PRACTICES I**  This practical based course will provide opportunity to practice the fundamental processes of welding and cutting processes and applications, safe handling and use of potentially dangerous equipment, operating principles, and application of oxy-acetylene welding and cutting equipment. Correct operating techniques in fusion welding, brazing and cutting will be practiced.  **Prerequisites:** None. **Co-requisites:** None. | **WELDING PROCESSES AND PRACTICES I** (150) – Course description change  This course provides students with an opportunity to practice welding and cutting processes. Student will practice SMAW, GMAW, FCAW and Oxy-fuel processes in accordance with current industry safety standards. Students will practice fusion and non-fusion welding.  **Prerequisites:** None. **Co-requisites:** None. | |
| Health and Safety Theory & Applications (49)  CNST151  CNST 152 | Health and Safety Theory (21)  This course emphasizes the safety aspects encountered on a job site. Students will obtain workplace and industry related safety certifications. In addition to learning occupational health and safety regulations, students will also received training in fall arrest, and hoisting and rigging.  Health and Safety Applied Applications (28)  Need Course Description  **Prerequisites:** None. **Co-requisites:** None. | Health and Safety Theory (21)  This course emphasizes the safety aspects encountered on a job site. Students will obtain workplace and industry related safety certifications. In addition to learning occupational health and safety regulations, students will also received training in fall arrest, and hoisting and rigging.  Health and Safety Applied Applications (28)  Need Course Description  **Prerequisites:** None. **Co-requisites:** None. | |
| **Preparing for a Career in Skilled Trades**  Course Number: GNED 101 | **Preparing for a Career in Skilled Trades (45)**  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 | **Preparing for a Career in Skilled Trades (45)**  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  This course is moving to semester two | |
| **COMPUTER SKILLS IN TRADES**  COMP370 | **COMPUTER SKILLS IN TRADES**(30)  This course covers the use of operating systems and web to generate professional reports and quotations. Creating spreadsheets using MS Excel for business applications will also be examined.  **Prerequisites:** None. **Co-requisites:** None. | **COMPUTER SKILLS IN TRADES**(30)  This course covers the use of operating systems and web to generate professional reports and quotations. Creating spreadsheets using MS Excel for business applications will also be examined. This course is moving to semester two  **Prerequisites:** None. **Co-requisites:** None. | |
| **COMMUNICATIONS**  **COMM 166** |  | **COMMUNICATION 166**  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.  This is a new course in the program that will replace one of the previous Gen Eds | |
| **Semester Two** | | | |
| **NEW** |  | **BLUEPRINT READING FOR WELDERS II (30) –New course**  This course builds on the material covered in Blueprint Reading for Welders. Students will do layouts according to blueprint specifications using appropriate tools  **Prerequisites:**Blueprint Reading for Welders I **Co-requisites:** None. | |
| **WELDING FAULTS AND INSPECTION TECHNIQUES**  MECH181 | **WELDING FAULTS AND INSPECTION TECHNIQUES**  This course will provide the learner with an understanding of welding quality from a perspective of defect identification and reviewing cause, effect and corrective actions for various defects. Understand function & application of destructive and non-destructive testing materials in weld quality, weld discontinuities, defects.  **Prerequisites:** None. **Co-requisites:** None. | **WELDING FUNDAMENTALS** II (45) – New course  This course building on the material covered in Welding Fundamentals I. This course will provide the learner with an understanding of welding faults, inspection techniquesand corrective actions for various defects. This course will provide the learner with basic knowledge of the properties of various metals, including the classification system used to define them. Distortion effects of various welding and fabrication processes on metals will be explored. Students will also be introduced to the various consumables and electrodes utilized in welding processes.  **Prerequisites:WELDING FUNDAMENTALS** I  **Co-requisites:** None. | |
| **METALLURGY, ELECTRODES AND CONSUMABLES**  MECH182 | **METALLURGY, ELECTRODES AND CONSUMABLES**  This course will provide the non-metallurgist with basic knowledge of various metals, alloys, their properties and the classification system used to define them. Heating and cooling effects of various welding and fabrication processes on metal and alloys will be explored. Students will also be introduced to the various consumables and electrodes utilized in welding processes.  **Prerequisites:** None. **Co-requisites:** None. | Omit –material is being covered in Welding Fundamentals II | |
| **WELDING PROCESSES AND PRACTICE II**  MECH183 | **WELDING PROCESSES AND PRACTICE II**(195)  This course builds on Welding Processes and Practices1 in providing students the opportunity to practice multiple welding processes and positions including the setup and application of various makes and types of welding machines. Included in this course are practical skills in Shielded Metal Arc Welding, Gas Metal Arc Welding and All Positions Plate Welding.  **Prerequisites:** None. **Co-requisites:** None. | **WELDING PROCESSES AND PRACTICE II**(150)–Course Description has changed and hours will go from 195 to 150  This course builds on material covered in Welding Processes and Practices I. Students will learn out of position welds. Students will be provided with an opportunity to acquire four certifications: 1F, 2F,3F,4F from CWB. Included in this course are practical skills in applying Shielded Metal Arc Welding, Gas Metal Arc Welding and All Positions Plate Welding.  **Pre-requisites:WELDING PROCESSES AND PRACTICE I**  **Co-requisites:** None. | |
| **COMPUTER SKILLS IN TRADES**  COMP370 |  | **COMPUTER SKILLS IN TRADES**  This course covers the use of operating systems and web to generate professional reports and quotations. Creating spreadsheets using MS Excel for business applications will also be examined.  **Prerequisites:** None. **Co-requisites:** None. | |
| **Preparing for a Career in Skilled Trades**  Course Number: GNED 101 | Eliminate Choice Gen Ed | **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 | |