

Industrial Mechanic (Millwright)

Transition Plan

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Abbreviations

CCDA	Canadian Council of Directors of Apprenticeship
CL	Current level (2014)
ER	Employer sponsor
FDN	Foundation program
HL	Harmonized level (Jan 2018)
NOA	Red Seal National Occupational Analysis
RSOS	Red Seal Occupational Standard; replaces NOA
SLE	Standardized Level Exam
TP	Training provider
TT	Technical training
TW	Trade worker
WBT	Work-based training

Harmonization Overview

The Canadian Council of Directors of Apprenticeship (CCDA) is responsible for the Red Seal Program, which develops common interprovincial standards and examinations. The CCDA is undertaking the Harmonization Initiative in 30 Red Seal trades by 2020. British Columbia is an active participant in this initiative.

The goal is to substantively align apprenticeship systems across Canada by making apprenticeship training requirements more consistent in the Red Seal trades.

Harmonization Priorities

1. Use of Red Seal **trade name**
2. Consistent **total training hours** (in-school and on-the-job)
3. Same number of **training levels**
4. Consistent **sequencing** of training content, including use of most recent Red Seal Occupational Standard (RSOS).

Millwright

	Changing in BC?	What will it be?
TRADE NAME	NO	Industrial Mechanic (Millwright)
NUMBER OF TRAINING LEVELS	NO	4
TOTAL HOURS Technical + work-based training	YES	7200 hours WBT decreased by 240
TRAINING SEQUENCE order of subjects taught	YES	Changes to sequence

Transition Planning Process

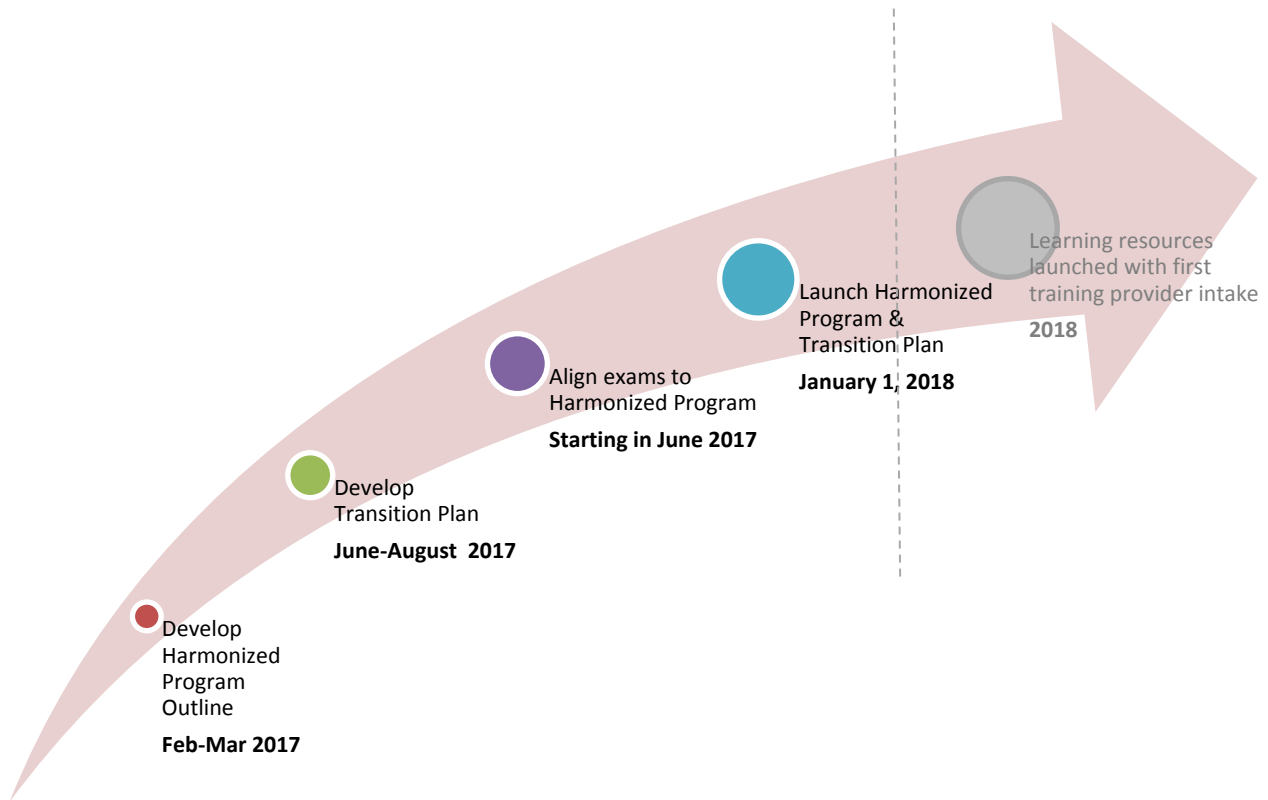
The re-sequencing of the Millwright program through the Harmonization Initiative has resulted in significant changes to the sequencing of technical training.

We consulted with the 8 public post-secondary institutions that deliver the Millwright program, and also considered the input of our internal partners. We evaluated a number of scenarios, and the transition plan outlined in this document was identified as the best option. We have also ensured that there are options for all current apprentices to complete their apprenticeship.

In all of our work on harmonization, we are guided by the following principles:

- Meet the needs of industry
- Minimize disadvantage to TWs, including those currently registered
- Minimize challenges for training providers in implementing the program

Program Development and Transition Planning 2016-2017



Training Providers (8)

BC Institute of Technology
College of New Caledonia
College of the Rockies
Kwantlen Polytechnic University

Northern Lights College
Northwest Community College
Selkirk College
Thompson Rivers University

Note: Not all institutions teach every level. See *Appendix A: Training Provider Schedules* for a list of courses offered for 2018.

Visit the *Trades Training BC* website for the most up-to-date listing of trades training available through BC's public training providers.

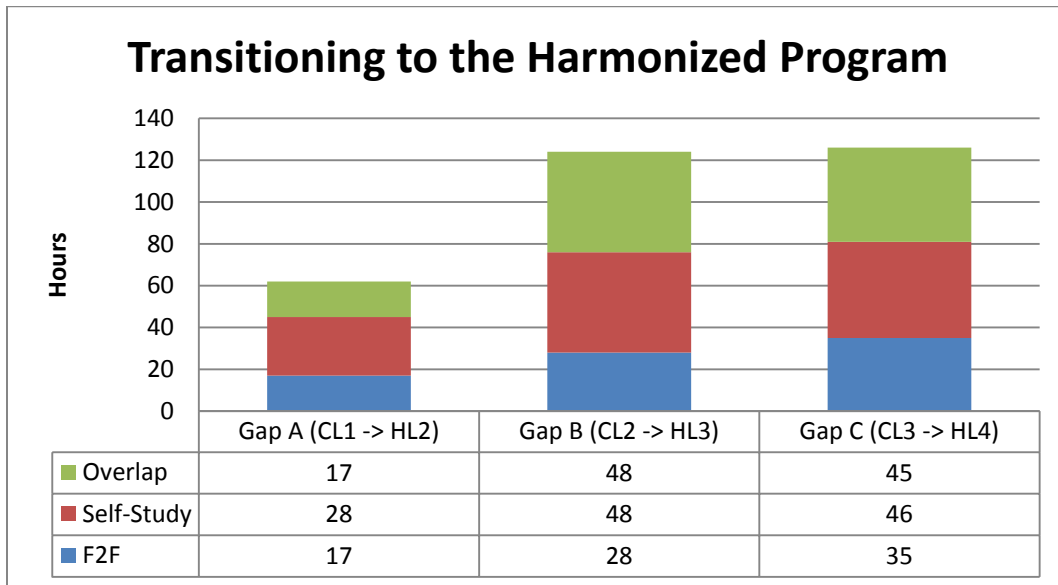
Apprentice Numbers in Current Program

Program	Status	0TT	1TT	2TT	3TT	Total
Apprentice	Active	344	291	276	229	1140
	Inactive	409	86	68	38	601
	Total	753	377	344	267	1741
FDN (Funded seats per year)			186			

Notes on the numbers:

1. Numbers are as of March 14, 2017
2. **Current Level 4TT** - TWs who have completed L4 TT are not considered in transition planning.
3. **Foundation (FDN)** - Because trade workers (TWs) don't need to register with ITA to take a Foundation (FDN) course, our FDN numbers are the number of funded seats for FDN (186 for 17/18).

The Gaps



Gap A (CL1→HL2) applies to a student who has completed Current Level 1 or Foundation and is moving into Harmonized Level 2.

Gap B (CL2→HL3) applies to a student who has completed Current Levels 1&2 and is moving into Harmonized Level 3.

Gap C (CL3→HL4) applies to a student who has completed Current Level 1,2&3 and is moving into Harmonized Level 4.

Overlap refers to the hours of content that a student who transitions to the harmonized program will be repeating.

Gap is an estimate of the hours of self-study and training a student would need in order to complete the missing competencies if they transition to the harmonized program.

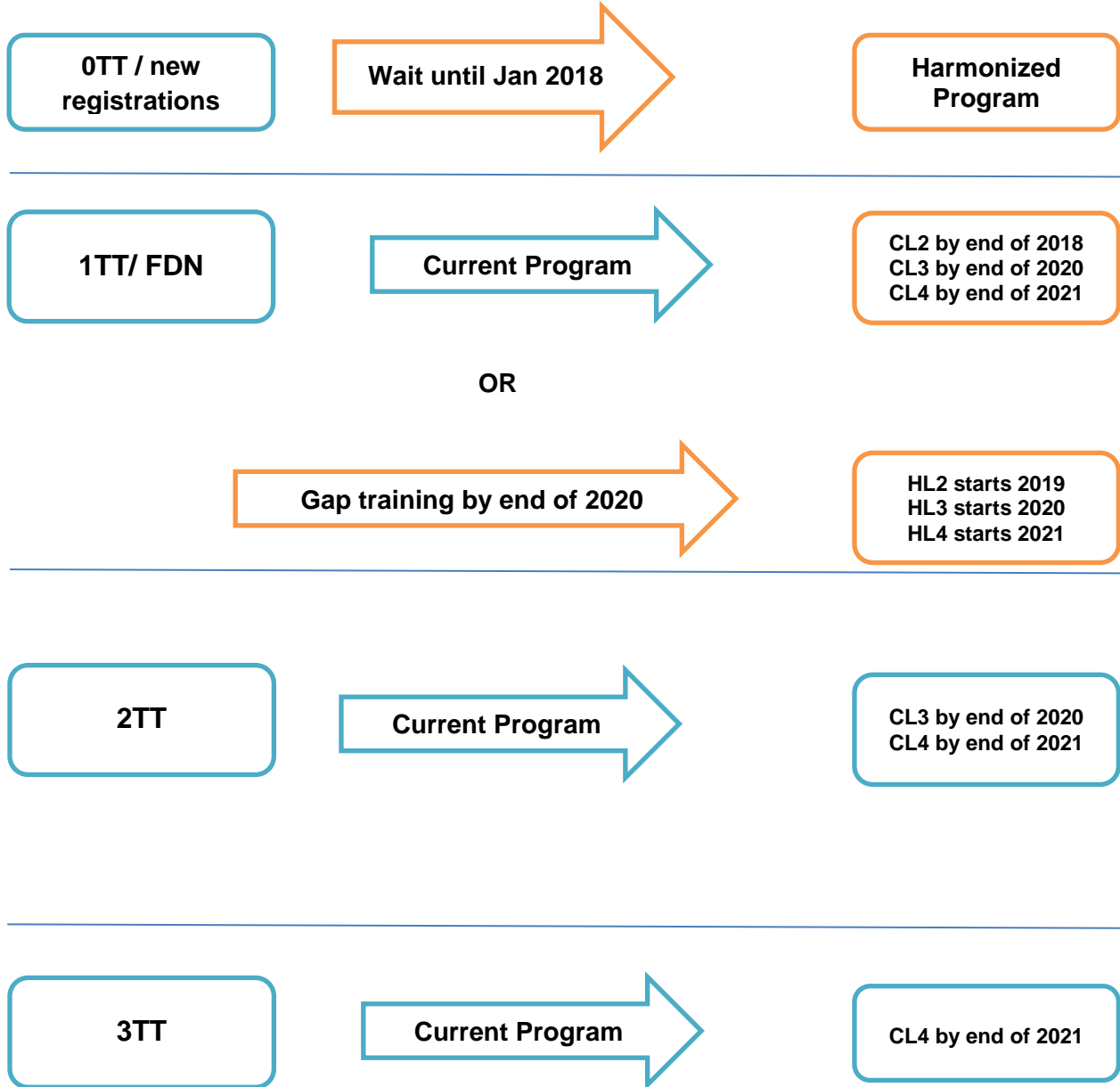
See [Appendix C: Details of Gaps](#) for a list of the missing competencies

Final Scenario (Phase in with dual streaming and gap training)

Implementation Timelines	
Level 1/ Foundation/ Youth	January 1, 2018
Level 2	January 1, 2019
Level 3	January 1, 2020
Level 4	January 1, 2021

Year 0 2017	CL1	CL2	CL3	CL4
Year 1 2018	HL1	CL2	CL3	CL4
Year 2 2019	HL1	HL2 Gap Training 17 hrs	CL3	CL4
Year 3 2020	HL1	HL2 Gap Training 17 hrs	HL3 CL3	CL4
Year 4 2021	HL1	HL2	HL3	HL4 CL4
Year 5 2022	HL1	HL2	HL3	HL4

Pathways for Current Apprentices (Summary) - Millwright



Work-Based Training Hours (WBT)

The following changes to training time for Millwright will come into effect **January 1, 2018**:

- Decreased work-based training (WBT) hours in order to align with the harmonized standard of 7,200 hours of total training (**decrease of 240 hours**)

Apprenticeship Pathway

Current Program	Hours
Technical Training	840
Work-based Training Hours	6,600
Current Total Training Hours	7,440

Harmonized Program	Hours
Technical Training	840
Work-based Training Hours	6,360
Harmonized Total Training Hours	7,200

Challenge Pathway and Sign-off Authority

Current Program	Hours
Work-based Training Hours for Apprenticeship	6,600
ITA formula for calculating challenge trade related work experience	X 1.5
Current Challenge WBT Hours	9,900

Harmonized Program	Hours
Harmonized Work-based Training Hours for Apprenticeship	6,360
ITA formula for calculating challenge trade related work experience	X 1.5
Harmonized Challenge WBT Hours	9,540

NOTE: If TWs complete in current program, the WBT hours for that program will apply. If they transition, they will have to complete the WBT hours for the harmonized program.

Exams

Exams for the Harmonized Program

Exam	Exam Development	Exam Launch
HL1 (SLE)	Winter 2017	Spring 2018
HL2 (SLE)	Winter 2017	Spring 2019
HL3 (SLE)	Winter 2019	Spring 2020

*HL1, HL2, and HL3 all have SLEs, and so they will be piloted. Therefore, they will not be ready for the first cohort of students. Marks for this cohort will be based on in-class assessment only. HL4 students will write the IP, as usual.

Appendix A: Training Provider Schedules

SCHEDULE LISTING for Jan. 1, 2018 IMPLEMENTATION DATE
(Taken from Trades Training BC website August, 1st 2017)

Foundation

INSTITUTION	PROGRAM NAME	STARTS	ENDS	CAMPUS
BCIT	Millwright Foundation	Jan. 22, 2018	Jul. 06, 2018	Burnaby
New Caledonia	Industrial Mechanic (Millwright) / Machinist	Jan. 29, 2018	Jul. 13, 2018	Vanderhoof
Thompson Rivers	Industrial Mechanic (Millwright) / Machinist	Jan. 29, 2018	Jun. 29, 2018	NorKam
Kwantlen Polytechnic	Millwright/ Industrial Mechanic	Feb. 05, 2018	Jul. 21, 2018	Cloverdale
Selkirk College	Millwright/ Machinist Foundation	Feb. 05, 2018	Aug. 30, 2018	Silver King Campus - Nelson

Level 1

INSTITUTION	PROGRAM NAME	STARTS	ENDS	CAMPUS
BCIT	Millwright	Jan. 08, 2018	Feb. 23, 2018	Burnaby
Kwantlen Polytechnic	Millwright/Industrial Mechanic	Mar. 05, 2018	Apr. 20, 2018	Cloverdale
New Caledonia	Industrial Mechanic (Millwright)	Mar. 26, 2018	May 11, 2018	Quesnel

Level 2

INSTITUTION	PROGRAM NAME	STARTS	ENDS	CAMPUS
BCIT	Millwright	Jan. 08, 2018	Feb. 23, 2018	Burnaby
New Caledonia	Industrial Mechanic (Millwright)	Feb. 19, 2018	Apr. 06, 2018	Prince George – Main Campus
Thompson Rivers	Industrial Mechanic (Millwright)	Feb. 19, 2018	Apr. 06, 2018	NorKam
BCIT	Millwright	Mar. 05, 2018	Apr. 20, 2018	Burnaby

Level 3

INSTITUTION	PROGRAM NAME	STARTS	ENDS	CAMPUS
New Caledonia	Industrial Mechanic (Millwright)	Jan. 02, 2018	Feb. 16, 2018	Prince George – Main Campus
New Caledonia	Industrial Mechanic (Millwright)	Jan. 02, 2018	Feb. 16, 2018	Prince George – Main Campus
BCIT	Millwright	Jan. 08, 2018	Feb. 23, 2018	Burnaby
Northern Lights	Millwright	Feb. 13, 2018	Mar. 29, 2018	Dawson Creek
BCIT	Millwright	Feb. 19, 2018	Apr. 06, 2018	Burnaby
BCIT	Millwright	Mar. 05, 2018	Apr. 20, 2018	Burnaby

Level 4

INSTITUTION	PROGRAM NAME	STARTS	ENDS	CAMPUS
Thompson Rivers	Industrial Mechanic (Millwright)	Jan. 02, 2018	Feb. 16, 2018	NorKam
College of the Rockies	Millwright	Jan. 08, 2018	Feb. 22, 2018	Gold Creek
Kwantlen Polytechnic	Millwright/Industrial Mechanic	Jan. 08, 2018	Feb. 23, 2018	Cloverdale
New Caledonia	Industrial Mechanic (Millwright)	Jan. 29, 2018	Mar. 16, 2018	Quesnel
New Caledonia	Industrial Mechanic (Millwright)	Feb. 19, 2018	Apr. 06, 2018	Prince George – Main Campus
New Caledonia	Industrial Mechanic (Millwright)	Feb. 19, 2018	Apr. 06, 2018	Prince George – Main Campus
BCIT	Millwright	Mar. 05, 2018	Apr. 20, 2018	Burnaby

Appendix B: Details of Gaps

GAP A: CL1→HL2

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 1 (CL1) and then take Harmonized Level 2 (HL2).

Competency	Objectives	Achievement Criteria	Changes	Self-study	F2F hours	Priority	Comments
C3 Lubricate systems and components	Describe lubrication types and systems Describe the safe use, storage and handling of lubricants	No	HL1 ← CL2	7	3	Lo-Med	Taught in context of other tasks – gears, chains
C4 Perform leveling of components and systems	Describe the use of layout tools Describe appropriate layout procedures for the installation of machinery Explain the safe use and handling of grouts Describe equipment foundations and associated materials	No	HL1 ← CL2	7	2	Lo	May also be taught in context of other tasks
G1 Select and use sling and rigging attachments	Select and use sling and rigging attachments	Tie knots	HL1 ← CL2	6	3	Hi	
G2 Select and use hoisting and lifting equipment	Identify and use hand rigging and devices Identify and describe cranes	No	HL1 ← CL2	5	4	Hi	
G3 Create a rigging plan	Perform rigging calculations Create a rigging plan	Create a rigging plan	HL1 ← CL2	3	5	Hi	
			Total gap hours	28	17		

Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 1 (CL1) and then take Harmonized Level 2 (HL2).

Overlap	Changes	Overlap Hours
C7 Perform material identification	CL1→HL2	5
C8 Perform heat treatment of metal	CL1→HL2	12
	Total Hours of Content Repeated at HL2	17

GAP B: CL2→HL3

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 2 (CL2) and then take Harmonized Level 3 (HL3).

Competency	Objectives	Achievement Criteria	Changes	Self-study	F2F hours	Priority
I1 Select, install and maintain couplings	Identify different types of couplings Assemble, install, and maintain couplings Recognize coupling failure and diagnose problems	No	HL2 ← CL3	7	3	Hi
I2 Select, install and maintain clutches and brakes	Inspect clutches and brakes	No	HL2 ← CL3	6	3	Hi
J1 Select, install and maintain chain drive systems	Describe drive chains	Install and align drive chains	HL2 ← CL3	8	4	Hi
J2 Select, install and maintain belt drive systems	Define belt drive terminology Identify types and arrangement of belt drive systems Install and service belt drive systems	Install and align belt drives	HL2 ← CL3	8	4	Hi
K1 Select and install gear systems	Describe gear terminology Identify types and arrangements of gears and gear drives	No	HL2 ← CL3	6	3	Hi
K2 Diagnose, maintain and repair gear systems	Inspect and repair gear drives	Disassemble and assemble gear/ boxes	HL2 ← CL3	3	6	Hi
L1 Perform rough alignment	Describe shaft alignment procedures Use shaft alignment tools Demonstrate shaft alignment	No	HL2 ← CL3	4	1	Med

Competency	Objectives	Achievement Criteria	Changes	Self-study	F2F hours	Priority
	procedures Record shaft alignment results					
L2 Perform dial alignment procedures	Perform rim and face dial alignment tools	Align drive shafts	HL2 ← CL3	6	4	Med
			Total gap hours	48	28	

Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 2 (CL2) and then take Harmonized Level 3 (HL3).

Overlap	Changes	Overlap Hours
C9 Use mechanical drawings and specification	CL2→HL3	6
Q1 Identify hydraulic components	CL2→HL3	42
	Total Hours of Content Repeated at HL3	48

Gap C: CL3→HL4

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 3 (CL3) and then take Harmonized Level 4 (HL4).

Competency	Objectives	Achievement Criteria	Changes	Self-study	F2F hours	Priority	Comments
C1 Use mathematics and science	Use fluid power theory Use fluid power calculations	No	HL3 ← CL4	3	3	Lo	Could be taught in context with R1-R3 and Q1-Q3
C9 Use mechanical drawings and specifications	Identify and use schematic and graphical symbols used in hydraulic and pneumatic circuitry as it pertains to JIC and ISO standards Identify and interpret the symbols used on vacuum system drawings	No	HL3 ← CL4	3	3	Lo	Could be taught in context with R1-R3 and Q1-Q3
O1 Identify and select compressors	Identify types of compressors Describe positive and non-positive displacement compressor theory	No	HL3 ← CL4	10	3	Med	
O2 Install, maintain and repair compressors	Describe maintenance and troubleshooting of compressors	No	HL3 ← CL4	10	5	Med	
P2 Select, install and maintain piping	Describe the functions and methods of loading and unloading material handling systems Describe, maintain and identify the various types and components of material handling systems Assemble and install	Thread and solder pipe	New to HL3	6	4	Lo	

Competency	Objectives	Achievement Criteria	Changes	Self-study	F2F hours	Priority	Comments
	pipng components						
R1 Identify pneumatic and vacuum components	Identify and describe pneumatic and vacuum components	No	HL3 ← CL4	8	3	Hi	
R2 Assemble pneumatic and vacuum circuits	Interpret and design pneumatic circuitry Assemble basic pneumatic circuitry Set and adjust pneumatic circuits	Assemble pneumatic circuits	HL3 ← CL4	2	12	Hi	
R3 Maintain and repair pneumatic and vacuum systems	Maintain and service pneumatic and vacuum systems Troubleshoot faults associated with pneumatic and vacuum systems Describe the maintenance of dryers	No	HL3 ← CL4	4	2	Hi	
			Total gap hours	46	35		

Overlap (Repeated Content)

This table lists the content that a student will be **repeating** if they have completed Current Level 3 (CL3) and then take Harmonized Level 4 (HL4).

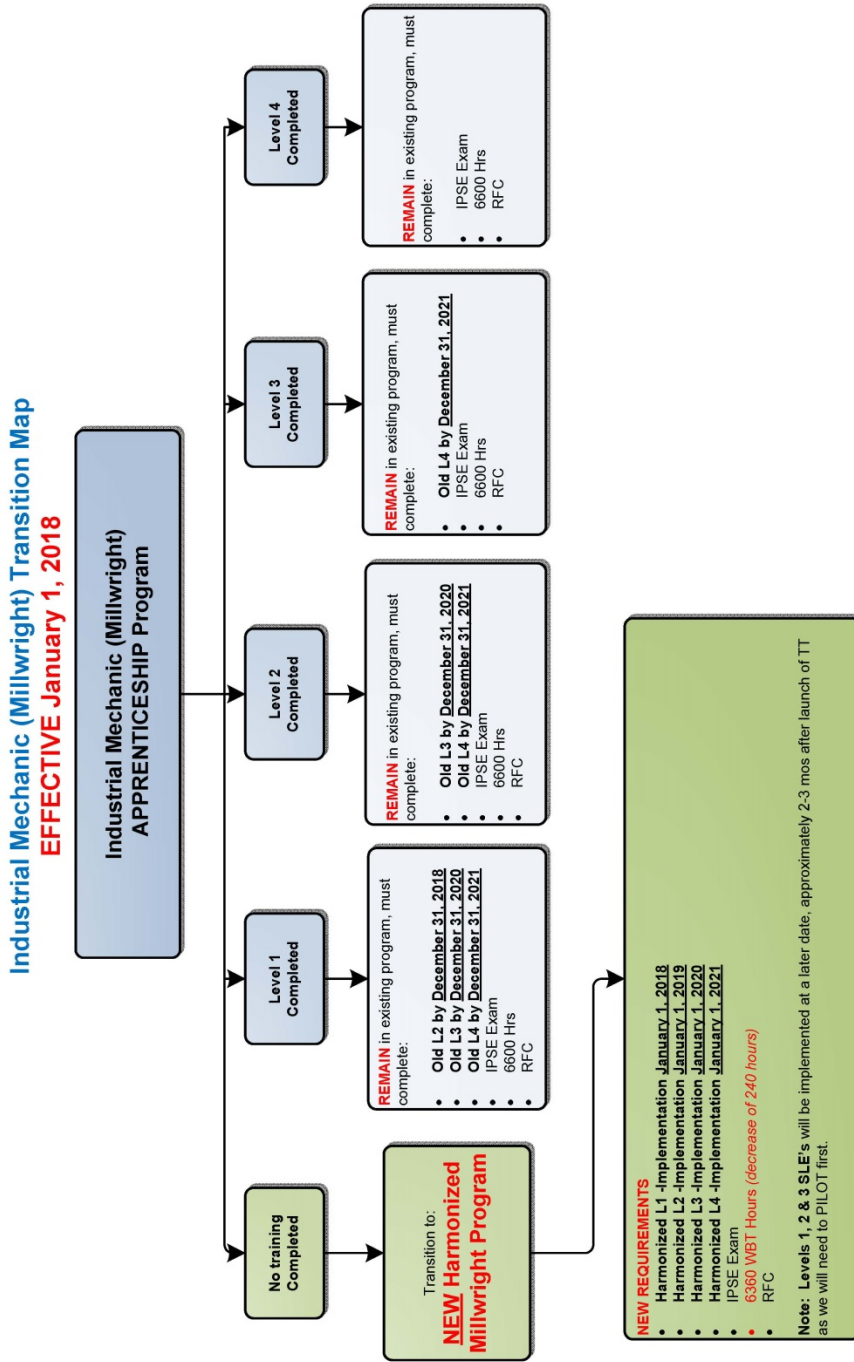
Overlap	Changes	Overlap Hours
S1 Identify conveying system components	CL3→HL4	15
S2 Assemble conveying systems	CL3→HL4	15
S3 Maintain and repair conveying systems	CL3→HL4	15
	Total Hours of Content Repeated at HL4	45

Appendix C: Overall Communication Plan

Audience	Action/Mode
Training Providers, Re: Foundation programs Enhanced foundations Youth Programs	Program Update & Transition Plan
Everyone at ITA	Program Update and Transition Plan
Senior Leadership Team & Management Leadership Team	Program Update and Transition Plan Transition Summary Document
Training Investment	Face to face meeting and supporting documentation
Apprenticeship Advisors	Face to face meeting and supporting documentation
Assessment Department	Face to face meeting and supporting documentation
Customer Service	Face to face meeting and supporting documentation
Apprentices	Letters Targeted outreach Projects
Employers	Letter Targeted outreach
	Presentations at Sector Advisory Groups (SAGs) and Program Advisory Groups (PACs)
Deans/BCATTA/Training Providers	Final webinar

Audience	Action/Mode
	Program Update
	LOAs Training plan reviews

Appendix D: Transition Map



Last Updated: October 18, 2017