ONTARIO COLLEGE OF TRADES
ORDRE DES MÉTIERS DE L'ONTARIO

Release Of Updated Apprenticeship Curriculum Standard	
Trade Name(s) and Code(s)	• 456A – Welder
Implementation Date of New Standard	• September 1, 2017 - released as version 300
Implementation Plan	• The Ontario College of Trades (the 'College') is implementing a new curriculum standard for three levels of in-school training for 456A – Welder • The College advises an Implementation Date for all three levels of 456A – Welder by September 1, 2017 • It is expected that apprentices will advance through training without having to repeat any areas. • The EOIS-APPR has been updated to reflect the new curriculum standard • Apprentices who began their apprenticeship on the former 2008 Curriculum Standard can complete their program using that standard
Impact on Training Standard	• The skills and competencies in the upcoming Training Standard will be aligned to the learning outcomes in the new curriculum standard
Curriculum Standard Access	• The new Curriculum Standard will be made available on the Ontario College of Trades website
Content Changes	Level 1 Reportable Subject changes: N/A Level 1 Learning Outcomes Content Changes: • **Equipment for Training Delivery Agents** **The below content has been added to this section:** …..work clothing, boots, coveralls, welding jacket, welding, helmets and prescription (safety) glasses.

Items such as hard hats, eye and hearing protection, and all other tools and equipment are frequently the responsibility of the employer.

Resource materials, charts, regulations, specifications, service bulletins, manufacturer's manuals, and logbooks are supplied by the employer or equipment owner.

- **General Learning Outcome**

The following sentence has been added at the beginning of the initial paragraph on each skill set:

Upon successful completion the apprentice is able to describe…..

The above mentioned changes are to be implemented to reflect a terminology that is currently used by the industry.

Level 2 Reportable Subject Changes

N/A

Level 2 Learning Outcome Content Changes

Level 2

- **S3198.2 Metallurgy**

2.3 The terms "plain carbon steels, AISI, ASTM and CSA" have been removed.

- **S3198.3 Inspection and Testing**

3.2 The terms "straight" and angle beam methods" and "(PAUT) Phase Array Ultrasound" have been removed.

- **S3198.4 Gas Tungsten Arc Welding (GTAW)** has been added.
- **S3199.1 Fillet Weld in all positions with Shielded Metal Arc Welding**

1.2 The terms "WFS and duty cycle" have been added.

- **S3200.1 Fillet Welds with Gas Metal Arc Welding (GMAW) Practical II**

1.2 The term "short circuit transfer" has been removed.
The term "type" has been removed.

- **S3200.2 Groove Welds with Gas Metal Arc Welding (GMAW) Practical II**

  The term "short circuit transfer" has been removed.

- **S3200.3 Fillet Welds with Flux Cored Arc Welding (FCAW) Practical II**

3.2 The terms "self-shielded", "size", "shielding gases" and "identify coupons for bend positions" have been added.

3.3 This entire skill set has been added.

- **S3200. 4 Groove Welds with Flux Cored Arc Welding (FCAW) Practical II**

4.2 The terms "consumables and gas shielded" have been added.

The above mentioned changes are to be implemented to reflect a terminology that is currently used by the industry.

Level 3 Reportable Subject Changes

N/A

Level 3 Learning Outcome Content Changes

- **S3202.1 Layout and Pattern Development**

1.1 The term "truncated pyramidal shapes" has been removed.

- **S3202.2 Fabrication Equipment**

2.1 The term "capacity" has been removed.

- **S3203.1 Metallurgy II**

1.1 The term "carbon steel microstructures" has been added.

- **S3203.3 Inspection and Codes**

3.4 The term "content of welding procedure documents" has been added.

- **S3204.1 Gas Tungsten Arc Welding (GTAW) Theory II**

1.2 The term "gas lenses" has been added.

- **S3204.2 Fillet and Groove Welds with the Gas Tungsten Arc Welding (GTAW) Process**

2.1 The term "tungsten" has been added.

2.2 The term "methods" has been added.

2.3 The term "pre-heat operation" has been added.

	• **S3204.3 Pipe Welding with the Gas Tungsten Arc Welding (GTAW) Process** **3.1** The term "nibbler" has been removed. **3.2** The terms "pre-heat", "post heat", "tubing" and "pipe/tubing schedules" have been added. • **S3204.4 Fillet and Groove Welds on Aluminium with the Gas Tungsten Arc Welding Process (GTAW) Process** **4.3** The terms "5F position" and "1GR (rotate) position" have been added. • **S3204.5 Plasma Arc Welding** **5.1** The term "process utilization" has been added. The term "arc" has been added. • **S3205.1 Fillet and Groove Welds with Gas Metal Arc Welding (GMAW-P) Pulsed Process** The hours that were designated to describe the fundamentals of the pulsed arc metal mode of the Gas Metal Arc Welding Pulsed (GMAW-P) process in the previous document have been re-assigned to what is section 1.1 in this updated curriculum as they can be covered as a single skill set. **2.2** The term "thin gauge" has been removed. • **S3205.3 Submerged Arc Welding** **3.2** The term "flux recovery" has been added. **3.3** The terms "compatible" and "combinations" have been added. The above mentioned changes are to be implemented to reflect a terminology that is currently used by the industry.

Hour Changes

Level 1 hours allocation

There has been a re-allocation of 4 hours from Practical to Theory components and hours were re-allocated in between learning outcomes to encompass the content taught in-school components as showing below:

2008

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3190	**Trade Practices**	33	28	5
S3191	**Applied Blueprint Reading**	60	39	21
S3192	**Welding Theory I**	30	30	0
S3193	**Material and Process Quality I**	27	27	0
S3194	**SMAW Practical I**	69	3	66
S3195	**Gas Shielded Semi-Automatic Welding Practical I**	54	2	52
S3196	**Thermal Cutting**	27	9	18
		300	**138**	**162**

2016

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3190	**Trade Practices**	45	40	5
S3191	**Applied Blueprint Reading**	48	36	12
S3192	**Welding Theory I**	39	39	0
S3193	**Material and Process Quality I**	27	27	0
S3194	**SMAW Practical I**	69	0	69
S3195	**Gas Shielded Semi-Automatic Welding Practical I**	54	0	54
S3196	**Thermal Cutting**	18	0	18
		300	**142**	**158**

Level 2 hours allocation
There has been a re-allocation of 5 hours from Theory to Practical and hours were re-allocated in between learning outcomes to encompass the content taught in-school components as showing below:

2008

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3197	**Blueprint Reading/Fitting**	39	27	12
S3198	**Welding Theory II**	18	17	1
S3199	**SMAW Practical II**	54	2	52
S3200	**Semi-Automatic Welding Practical II**	39	4	35
S3201	**Gas Tungsten Arc Welding (GTAW) Practical I**	30	3	27
		180	**53**	**127**

2016

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3197	**Blueprint Reading/Fitting**	39	27	12
S3198	**Welding Theory II**	21	21	0
S3199	**SMAW Practical II**	51	0	51
S3200	**Semi-Automatic Welding Practical II**	39	0	39
S3201	**Gas Tungsten Arc Welding (GTAW) Practical I**	30	0	30
		180	**48**	**132**

Level 3 hours allocation

There has been a re-allocation of 15 hours from Theory to Practical and hours were re-allocated in between learning outcomes to encompass the content taught in-school components as showing below:

2008

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3202	**Fitting**	87	54	33
S3203	**Quality**	39	33	6
S3204	**GTAW Practical II and PAW**	42	24	18
S3205	**Automatic and Semi-Automatic Processes**	27	12	15
S3206	**SMAW Practical III**	45	3	42
		240	**126**	**114**

2016

Number	Reportable Subjects	Hours		
		Total	Theory	Practical
S3202	**Fitting**	87	48	39
S3203	**Quality**	36	33	3
S3204	**GTAW Practical II and PAW**	42	12	30
S3205	**Automatic and Semi-Automatic Processes**	27	6	21
S3206	**SMAW Practical III**	48	0	48
		240	**99**	**141**

General Notes	• New set of unit numbers have been assigned throughout this document. These new set of unit numbers align with current EOIS implementation standards and were assigned to OCOT by MAESD. • Introductory page has been added at the beginning of all units, identifying all content to be reviewed including: duration, content, evaluation and testing. • An evaluation and testing hours, and a disclaimer sections have been added to Levels 2&3. • New innovations in welding technology and metal fabrication. • The expansion of trade specific concepts to enhance apprenticeship knowledge and completion rates. • The total hours in Curriculum have not changed, but there has been a slight movement of hours in between theory and practical hours. 20 hours have been added to the Practical Components in this Curriculum to comply with the National Practical Assessment. • Ontario Practical Assessment will be reviewed on the in-school curriculum as follows: ○ Reportable Subject S0780 - Shielded Metal Arc Welding (SMAW) Practical III Learning Outcome #5 - Shielded Metal Arc Welding (SMAW); ○ Reportable Subject S0780 - Shielded Metal Arc Welding (SMAW) Practical III Learning Outcome #5 - Shielded Metal Arc Welding SMAW); ○ Reportable Subject S0779 – Automatic and Semi-Automatic Processes Learning Outcome #4.1 - Gas Metal Arc Welding (GMAW); ○ Reportable Subject S0779 – Automatic and Semi-Automatic Processes Learning Outcomes #4.2 and 4.3 - Flux Cored Arc Welding or Metal Cored Arc Welding (NOTE: this process will be completed in Level 2); ○ Reportable Subject S0778 - Gas Tungsten Arc Welding (GTAW) Practical II Learning Outcome #3 - Gas Tungsten Arc Welding (GTAW);

	○ Reportable Subject S0887 – Thermal Cutting Learning Outcome #S0887.1 Oxy Fuel Cutting (NOTE: this process will be completed in Level 1) • There has been changes to all below terms throughout all 3 levels as follows: ○ The term "demonstrate" has been changed to "describe". ○ The term "Personal Protection Equipment" has been changed to "PPE". ○ The term "gas" has been changed to "gasses". ○ The term "tee" has been changed to "T". ○ The term "vee" has been changed to "V". The above mentioned changes are to be implemented to reflect a terminology that is currently used by the industry. **Harmonization Recommendations:** • That provinces and territories adopt Red Seal Trade Name 'Welder / Soudeur / Soudeuse'. • Total number of training hours to be 5400 (jurisdictions will determine the ratio of in-class vs. on-the-job training). • That the technical training program offers 3 training levels. • That the sequencing reflect the topic and sub-task mapping in the sequencing documents with the following variations: ○ Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW) and Metal Core Arc Welding (MCAW) will be taught progressively across all levels in most of Canada, but Alberta will offer them only in levels 2 and 3. • Ontario is complying with most of the sequencing of Reportable Subjects (please refer to additional attachment for further reference). • The Welder Training Standard was last updated in 2008 and was no longer reflective of industry needs. All of the changes reflect the evolution of the trade and industry's needs.