COURSE OUTLINE: CVC611 - TRADE PRACTICES

Prepared: Josh Boucher
Approved: Corey Meunier, Dean, Technology, Trades, and Apprenticeship

Course Code: Title	CVC611: TRADE PRACTICES
Program Number: Name	6080: COMM VEHICLE-COMMON
Department:	MOTIVE POWER APPRENTICESHIP
Academic Year:	2024-2025
Course Description:	Upon successful completion the apprentice is able to describe the legal responsibilities of employees and employers relating to safe working practices and protection of the environment, is able to demonstrate the operation of lifting, rigging, blocking and safety equipment, is able to use precision measuring tools, is able to perform fastening devise installation and removal procedures, is able to perform maintenance and repair procedures for bearings, seals and sealants, is able to operate heating and cutting equipment - all according to government safety regulations, environmental legislation, and manufacturers` recommendations.
Total Credits:	5
Hours/Week:	5
Total Hours:	40
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent

A+ 90 - 100% 4.00
A 80 - 89%
B 70 - 79% 3.00
C 60 - 69% 2.00
D 50 - 59% 1.00
F (Fail) 49% and below 0.00

CR (Credit) Credit for diploma requirements has been awarded.
S Satisfactory achievement in field /clinical placement or non-graded subject area.
U Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

Books and Required Resources:

ILM Welding Bundle *N* by Alberta Government
Publisher: AK Graphics

Heavy Duty Truck Systems by Sean Bennett
Publisher: Cenegage Edition: 7th
ISBN: 978-1-337-78710-9

Medium/Heavy Duty Truck Engines, Fuel & Computerized Management Systems by Sean Bennet
Publisher: Cenegage Edition: 6th
ISBN: 978-0-357-35854-2

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Upon successful completion the apprentice is able to describe the legal responsibilities of employees and employers relating to safe working practices, protection of the environment, and demonstrate the operation of lifting, rigging, blocking and safety equipment according to government safety and environmental legislation.	1.1.1 Explain the fundamentals of safe practices in the workplace. - protective clothing and equipment CSA approved eye, foot, hearing and hand protection Breathing and ventilation - housekeeping and cleanliness - dangers of wearing jewellery and loose clothing - fire protection extinguisher applications prevention - lifting techniques posture procedures - environmental protection disposal of antifreeze, fuels, oils, cleaning solvents, tires, and batteries. air quality and ventilation discharge of vapours 1.1.2 Identify the legal responsibilities of employees and employers relating to government legislation for relevant workplace activities. - Occupational Health and Safety Act - Workplace Hazardous Material Information System (WHMIS)

	- Apprenticeship and Certification Act - Environment Protection Act - environment responsibilities - storage of hazardous material volatile liquids cleaning agents acids - disposal of: antifreeze coolant oils tires cleaning solvent 1.1.3 Demonstrate inspection, testing, and operating procedures for lifting rigging and blocking equipment following manufacturers` recommended procedures and government regulations. - lifting devices hoists legal lifting requirement for overhead crane operation*** refer to O. Reg. 631/94 section 3 of Trades Qualification and Apprenticeship Act jacks chain lifts - blocking devices stands safety locks and lockouts - rigging devices rope chains belts brackets and hooks fastening procedures
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Upon successful completion, the apprentice is able to use precision measuring tools following manufacturers` recommendations.	1.2.1 Explain the fundamentals of precision and non-precision measuring tools. - systme international d`units (s.i.) and Imperial - measurements and conversions - accuracy and reliability vs. the cost of measuring tools 1.2.2 Identify the construction features, composition, types, styles, and application of precision measuring tools. - micrometers inside, outside, depth - small hole gauges - callipers precision vernier, non-precision - telescoping gauges - straight edge - thickness gauge (feeler gauges)

	- dial indicators - torque wrenches click type dial type flexing beam type electronic type adapters and extensions 1.2.3 Describe the principles of operation of precision measuring tools. - micrometer inside, outside, depth - small hole gauges - callipers precision vernier, non-precision - telescoping gauges - straight edge - thickness gauge (feeler gauges) - dial indicators - torque wrenches click type dial type flexing beam type electronic type adapters and extensions 1.2.4 Perform manufacturer maintenance and calibration procedures for precision and nonprecision measuring tools, and measure components. - describe basic tool maintenance procedures storage lubrication methods of restoring critical surfaces adjustments, calibration - precision measuring activities on various components crankshaft camshaft
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Upon successful completion the apprentice is able to perform fastening device installation and removal procedures following manufacturers` recommendations.	1.3.1 Explain the fundamentals of fastening devices and torquing procedures. - thread terminology, fastener grades/application - Society of Automotive Engineers (SAE) standards, systme international d`units (s.i.) - yield strength, tensile strength, shear strength, and fatigue - grade, pitch, threads per inch - diameter, length, and head size - thread locking compounds - anti-seize compounds - sealant applications - factors that affect torque/tension lubrication

	temperature length and diameter grade of fastener condition of threads composition of material 1.3.2 Identify the construction, composition, types, styles, and application of fastening devices. - bolts - nuts - screws - studs - locking devices - pins - rivets - keys - washers - retaining rings - thread repair devices - thread sealants - thread locking compounds - grade application criteria 1.3.3 Describe the principles of operation of fastening devices. - torque-to-yield fasteners - torque effects of wet, dry, and clean threads - locking devices - thread repair principles - temperature - compatibility - clamping force - effect of fastener grade on strength, flexibility, and torque 1.3.4 Perform installation and removal procedures following manufacturers` recommendations for fastening devices. - test fastener strength and torque requirements for wet and dry applications - demonstrate thread repair procedures for: freeing seized threads, removal of broken fasteners installation of thread repair and locking devices - metal working practices for: drilling tapping hacksawing filing - sealant selection, removal, and installation practices - thread locking and anti-seize application - torquing of fasteners to manufacturers` recommendations
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Upon successful completion the apprentice is able to	1.4.1 Explain the purpose and fundamentals of bearings, seals, and sealants.

	perform the maintenance and repair procedures for bearings, seals, and sealants following manufacturers` recommendations.	- friction - temperature - lubrication - bearing loads axial loads radial loads - preload - endplay - pressure seals dynamic static - sealants anaerobic non-anaerobic - gaskets - cleaning and surface preparation products 1.4.2 Identify the construction features, composition, types, styles, and application of bearings, seals, and sealants. - friction bearings - anti-friction bearings ball roller needle code identification - seals dynamic static - sealants anaerobic non-anaerobic - gaskets - cleaning and surface preparation products 1.4.3 Describe the principles of operation of bearings, seals, and sealants. - friction bearings - hydrodynamic suspension - anti-friction bearings ball roller needle - temperature - lubrication - bearing adjustments preload end play - pressure - seals dynamic static

	- sealant anaerobic non-anaerobic - gaskets yield creep - speciality sealant - cleaning and surface preparation products 1.4.4 Demonstrate inspection and testing procedures following manufacturers` recommendations for bearings, seals, and sealants. - bearing inspection and testing for: scoring spalling over-heating noise vibration electrical damage (arcing) clearance - seal inspection and testing for: migration leakage of seals or gaskets shaft and housing bore condition fluid compatibility 1.4.4 Recommend reconditioning or repairs following manufacturers` recommendations for bearings, seals, and sealants. - removal and installation procedures for: bearings seals sealants correct selection of sealant for application gaskets
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Upon successful completion, the apprentice is able to operate heating and cutting equipment following manufacturers` recommendations, government regulations, and safe work practices.	1.5.1 Explain the purpose and fundamentals of heating and cutting practices. - oxy-fuel gases - eye, face, hand, foot, and clothing protection - set-up, ignition, and shutdown sequence - cylinder handling/storage - fire prevention combustible material (e.g. butane lighter risks) - flashback - backfire - removing damaged or broken fasteners - using heat to free seized fasteners 1.5.2 Identify the construction features, types, and application of oxyacetylene heating and cutting equipment.

		- cylinders identification features - pressure regulator - manual valves - manifold systems - gauges and hoses - cutting attachments - tips cutting heating - torch body - heating tips - flashback arresters 1.5.3 Describe the principles of operation of oxyacetylene heating and cutting equipment. - cylinders - pressure regulator - manual valves - manifold systems - gauges and hoses - cutting attachments - torch body - tips cutting heating - flashback arresters 1.5.4 Outline the manufacturers` system maintenance procedures for oxyacetylene heating and cutting equipment. - cylinders - approved storage and securement - gauges and hoses - manual valves - pressure regulators - cutting attachments - tips cutting heating - torch body - manifold 1.5.5 Perform basic heating and cutting procedures following manufacturers` recommendations. - equipment set-up, ignition, and shutdown sequence oxygen and acetylene pressure settings ignition procedures select heating and cutting tips observe tip angle, travel speed, and gap demonstrate awareness of potential damage from heating or cutting to surrounding materials

	identify potential risks for altering metallurgical properties perform appropriate pressure settings, ignition, and flame adjustments for specific heating and cutting tasks remove damaged fasteners heating and removing procedures of seized fasteners

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Shop Assignments	40%
Theory Test	60%

Date: November 12, 2024

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.