COURSE OUTLINE: HET811 - TRADE PRACTICES

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Course Code: Title	HET811: TRADE PRACTICES
Program Number: Name	
Department:	MOTIVE POWER APPRENTICESHIP
Semesters/Terms:	20W
Course Description:	Upon successful completion the apprentice is able to perform shielded metal arc welding Procedures and metal inert gas (MIG) welding procedures following manufacturers` recommendations, government regulations, and safe work practices.
Total Credits:	3
Hours/Week:	0
Total Hours:	24
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 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. 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%,
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W Student has withdrawn from the course without academic penalty.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:

Course Pack HET801

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1.1 Shielded Metal Arc Welding (SMAW) Upon successful completion the apprentice is able to perform shielded metal arc welding procedures following manufacturers` recommendations, government regulations, and safe work practices.	1.1.1 Explain the purpose and fundamentals of the shielded metal arc welding process. - metallurgy - arc emissions - electrical polarity - electrical fundamentals 1.1.2 Identify the function, construction features, and application of shielded metal arc welding equipment and consumables. - transformers - rectifiers - controls - electrode holders - electrode specifications • codes • current type and polarity • position • penetration • base metal material • material condition - duty cycle 1.1.3 Describe the principles of operation of shielded metal arc welding equipment. - equipment settings - transformers - rectifiers - stationary and portable units - closed circuit voltage - open circuit voltage 1.1.4 Perform inspection and diagnostic procedures following manufacturers` recommendations of shielded metal arc welds. - describe and diagnose defective welds • porosity • lack of penetration • excessive heat • contamination - identify causes of defective welds

	1.1.5 Identify maintenance procedures for shielded metal arc welding equipment following manufacturers` recommendations. - welding cables - holding devices - power sources - protective equipment  1.1.6 Perform the assigned shielded metal arc welding procedures following manufacturers` recommendations and safe work practices. - machine adjustments and welds - trial beads - single and multi pass butt and fillet welds in flat position
Course Outcome 2	**Learning Objectives for Course Outcome 2**
1.2 Metal Inert Gas (MIG) Welding Upon successful completion the apprentice is able to perform metal inert gas (MIG) welding procedures following manufacturers` recommendations, government regulations, and safe work practices.	1.2.1 Explain the purpose and fundamentals of the metal inert gas (MIG) welding process. - electrical fundamentals - electrical polarity - power sources - wire feeders - gas shielding 1.2.2 Identify the function, construction features, composition, types, and application of metal inert gas (MIG) welding equipment and consumables. - power sources • rectifier • generator • inverter - consumables • wire types • wire specifications • wire sizes • shielding gases • contact tips 1.2.3 Describe the principles of operation and set-up of metal inert gas (MIG) welding equipment. - gun angle and travel - wire drive • pressure • speed • groove design - contact tip • cleanliness • gas flow • wire speed - voltage setting • metal thickness and type - shielding gas • flow rate 1.2.4 Perform inspection and diagnostic procedures of metal

		inert gas (MIG) welding operations. - inspect and diagnose weld defects • spatter • porosity • lack of penetration • excessive heat • wire speed o too fast o too slow • shielding gas o selection o flow rate 1.2.5 Identify maintenance procedures for metal inert gas (MIG) welding equipment following manufacturers` recommendations. - drive roll pressure - cable conduit cleanliness - contact tip condition - gas nozzle condition  1.2.6 Perform assigned operations for metal inert gas (MIG) welding procedures following manufacturers` recommendations and safe work practices. - weld deposits on lap and T joints - adjustments to: • voltage • wire speed • gas flow • electrode protrusion

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Practical Application Testing	50%
Theory Testing	50%

Date: February 10, 2020

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