Prepared: Jamie Schmidt Approved:

Course Code: Title	AST811: WORK PRACTICES
Program Number: Name	6069: AUTO SERV TN LEVEL 3
Department:	MOTIVE POWER APPRENTICESHIP
Semester/Term:	18W
Course Description:	Upon successful completion the apprentice will have the ability to explain the operating principles, perform inspection, test and diagnose climate control system according to manufacturersâ€™ standards.The apprentice will have the ability to explain the purpose and construction of body trim and glass components and perform necessary repairs following manufacturers` recommendations.
Total Credits:	4
Hours/Week:	4
Total Hours:	30
Essential Employability Skills (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. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	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W Student has withdrawn from the course without academic penalty.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	10%
Shop	50%
Tests	40%

Books and Required Resources:

Automotive technology a systems approach by Erjavec Restole
ISBN: 9780176501679

Course Outcomes and Learning Objectives:

Course Outcome 1.

Diagnose and Repair Climate Control Systems

Learning Objectives 1.

Explain the principles of compressor control systems.
- Drivability controls
- coolant temperature sensor
- voltage load shedding
- RPM
- throttle position sensor
- power steering pressure
- compressor protection
- ambient temp sensor
- low and high pressure cutout
- compressor temperature sensor
- compressor rpm sensor
- superheat circuit
- pressure relief valve
- fan controls
- electric and viscous drive
- pressure and temperature
- evaporator temperature controls
- thermostats and evaporator temperature sensors
- pressure cycling
- variable displacement compressors
- suction throttle, evaporator pressure regulator systems

Identify the components of compressor control systems.
- drivability controls
- compressor protection
- evaporator temperature controls
- STV, EPR systems

Explain the operating principles of automatic climate control systems.
- fully automatic, semi-automatic, manual control

- airflow control
- blower control
- mode control
- control units
- PCM
- BCM
- control head
- programmer
- input sensors
- ambient
- in-car
- coolant/heater core
- sunload
- driver
- outputs
- blend door motor
- temperature and coolant flow controls
- mode door motors
- blower control unit
- vacuum circuits

Describe inspection and testing procedures for climate control systems.
- climate controls
- visual inspection
- retrieving data and trouble codes
- determine faults without trouble codes - diagnose temperature and air flow
- refrigeration system
- visual inspection of all AC components
- diagnosis using gauges
- diagnose failed compressors and clutches
- symptoms of hydraulic lock.
- recognition of oil starvation
- testing belt tensioners
- check for low voltage
- leakage repairs
- flushing and filtering
- de-odorizing smells from air plenums

Perform inspection and testing procedures for climate control systems performance tests.
- climate controls
- visual inspection
- retrieving data and trouble codes
- determine faults without trouble codes
- diagnose temperature and air flow problems - movement and actuator performance
- refrigeration system
- visual inspection
- diagnosis using gauges
- diagnosis of failed compressors and clutches
- replace clutches on compressors
- repair lines and hoses
- leakage repairs by identifying leaky components
- flushing and filtering contaminated components
- de-odorizing smells from air plenums

Course Outcome 2.

	Body and Trim **Learning Objectives 2.** Explain the purpose of body and trim components. - weather stripping - windows and regulators - windshield/rear glass integrity - headlamp aiming - interior and exterior trim Identify body and trim components. - weather stripping - windows and regulators - windshield sealants - headlamps - interior and exterior trim Describe inspection, testing and repair procedures to body and trim components. - aim headlamp - fit and leaks - water dust - noise location and repair - squeaks - rattles - wind
Date:	Wednesday, February 28, 2018
	Please refer to the course outline addendum on the Learning Management System for further information.