COURSE OUTLINE: MPF126 - HD VEH SYST MAINT.

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Course Code: Title	MPF126: HEAVY DUTY VEHICLE SYSTEMS MAINTENANCE
Program Number: Name	4044: MOT POWER ADV REPAIR 5085: HEAVY EQUIP/REPAIR
Department:	MOTIVE POWER
Academic Year:	2024-2025
Course Description:	Heavy Duty System Maintenance, the student will perform simulated work place routine maintenance and services on various types of off road heavy equipment. You will perform hour specific scheduled maintenance, engine and power train lubrication fluid inspections and changes, as well as lubrication to under carriage and service of the hydraulic systems. You will be required to record data from such vehicles and equipment into the service records similar to that used by Heavy Equipment companies and fleets. This will include the creation and setup of such programs that could be adapted to electronic files and storage as so commonly used today. All servicing of this nature would be conducted by using proper safety and maintenance procedures as outlined in the manufacturer service information.
Total Credits:	1
Hours/Week:	2
Total Hours:	14
Prerequisites:	MPF103
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4044 - MOT POWER ADV REPAIR** VLO 1 Analyse, diagnose, and solve various motive power system problems by using problem-solving and critical thinking skills and strategies and by applying fundamental knowledge of motor vehicle operation, components, and their interrelationships. VLO 3 Diagnose and repair engine systems in compliance with manufacturer's recommendations. VLO 4 Diagnose and repair electrical, electronic, personal safety, and emission components and systems in compliance with manufacturer's recommendations. VLO 5 Diagnose and repair drive train components and systems in compliance with manufacturer's recommendations. VLO 6 Diagnose and repair suspension, steering, and brake components and systems in compliance with manufacturer's recommendations. VLO 7 Disassemble and assemble components to required specifications by applying workshop skills and knowledge of basic shop practices. VLO 8 Select and use a variety of troubleshooting techniques and test equipment to assess electronic circuits, vehicle systems, and subsystems. VLO 9 Apply knowledge of hydraulics and pneumatics to the testing and analysis of motive

		power systems and subsystems.
	VLO 10	Communicate information effectively, credibly, and accurately by producing supporting documentation to appropriate standards.
	VLO 11	Use information technology and computer skills to support work in a motive power environment.
	VLO 12	Prepare, support, maintain, and communicate data from log, record, and documentation systems.
	VLO 14	Assist in quality-control and quality-assurance programs and procedures.
	VLO 16	Complete all assigned work in compliance with occupational, health, safety, and environmental law; established policies and procedures; codes and regulations; and in accordance with ethical principles.
	5085 - HEAVY EQUIP/REPAIR	
	VLO 1	Identify basic motive power system problems by using critical thinking skills and strategies and by applying fundamental knowledge of motor vehicle operation, components, and their interrelationships.
	VLO 2	Identify, inspect, and test basic engine components and systems in compliance with manufacturers' recommendations.
	VLO 3	Identify, inspect, and test basic electrical, electronic, and emission components and systems in compliance with manufacturers' recommendations.
	VLO 4	Identify, inspect, and test basic drive train components and systems in compliance with manufacturers' recommendations.
	VLO 5	Identify, inspect, and test basic suspension, steering, and brake components and systems in compliance with manufacturers' recommendations.
	VLO 6	Disassemble and assemble components to required specifications by applying workshop skills and knowledge of basic shop practices.
	VLO 7	Use a variety of test equipment to assess basic electronic circuits, vehicle systems, and subsystems.
	VLO 8	Apply basic knowledge of hydraulics and pneumatics to the testing and inspection of basic motive power systems and subsystems.
	VLO 9	Communicate information effectively, credibly, and accurately by producing supporting documentation to appropriate standards.
	VLO 10	Use information technology and computer skills to access data concerning repair procedures and manufacturers' updates.
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 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 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:	V. EVALUATION PROCESS/GRADING SYSTEM: Assigned equipment service and maintenance inspection reports 50% Shop 50% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude. The following semester grades will be assigned to students: 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:	Heavy Duty Truck Systems by Bennett Publisher: Cengage Learning Edition: 7th

Course Outcomes and Learning Objectives:

Course Outcome 1	**Learning Objectives for Course Outcome 1**
Visually Identify types and styles of Heavy Equipment	• Identify different pieces of heavy equipment • Identify major components in heavy equipment.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Perform service and maintenance inspections following manufactures	• Be aware of safety hazards that exist in a heavy equipment repair shop and take proactive measures to address them.

	recommendations	• Be aware and take proactive measures to the safety hazards that exist in performing routine maintenance on heavy equipment. • Perform safe lifting procedures with every lift. • Perform safe climbing procedures when climbing is required. • Safely block a machine so maintenance can be performed as per manufactures recommendations. • Perform service and maintenance on heavy equipment as per manufactures recommendations. • Complete assigned inspection reports.
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	Perform Cooling System testing and Service using the proper methods and coolant handling equipment according to Manufacturers Specifications and Safety Policies.	• Test antifreeze freeze protection • Test PH and recommend the proper procedure to correct the problem • Check water pump drive system and fan • Check rad and hoses for condition, external leaks and cleanliness • Check drive belt tension and condition
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	Equipment Operation	• Demonstrate how to safely operate heavy equipment to perform routine maintenance on it as per manufactures` recommendations.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	Perform visual inspection, test and repair vehicle lighting systems.	• Check operation of all lighting systems • Replace and repair lighting as required
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	Perform the applicable engine lube service and chassis lubrication service to a variety of on road vehicles and equipment.	• Change engine oil and filters • Lube pins and bushings as required • Lube steering linkage and driveline components as required

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assigned Shop Projects	50%
Shop Practical	50%

Date: August 9, 2024

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