Course: AG 222-Agricultural Power Technology/Large Engines

Unit	Objective	CAERT Lesson Plan Library	Unit	Problem Area	Lesson
A. Safety	1. Identify safety equipment necessary for agricultural power systems	Ag Mechanics and Technology	A	6	4
	2. Apply basic laboratory safety instruction	Ag Mechanics and Technology	A	1	3
	3. Describe safety practices necessary when working with large engines	Ag Mechanics and Technology	A	4	1
	4. Apply safety practices when using tractors	Ag Mechanics and Technology	A	1	3
	5. Identify the safe tractor operation practices for field and highway conditions				
B. Agricultural Tractors	1. Identify and describe the operating principles of internal combustion engines--both spark ignition and diesel	Ag Mechanics and Technology	A	6	1
	2. Identify the daily service and care operations from the operator's manual				
	3. Identify the operating principles of the air cleaning, fuel and oil filtering and engine cleaning systems	Ag Mechanics and Technology	A	6	2,4
	4. Interpret the circuit diagram of the electrical and fuel injection systems of a diesel tractor	Ag Mechanics and Technology	A	6	6
	5. Interpret Nebraska Tractor Test information				
	6. Conduct pre-operation inspection of a farm tractor				
	7. Start, operate and stop the tractor engine properly				
C. Fuels and Lubes	1. Select, safely store and use fuels and lubricants for gasoline, LPG and diesel tractors	Ag Mechanics and Technology	A	6,7	6,1
	2. Decide what octane rating to select for gasolines with different ratios	Ag Mechanics and Technology	A	7	1
	3. Explain why the correct octane is important	Ag Mechanics and Technology	A	7	1
	4. Decide what grade of diesel fuel to select for different diesel engines	Ag Mechanics and Technology	A	7	1
	5. Decide what cetaine rating of diesel fuel to select for different diesel engines	Ag Mechanics and Technology	A	7	1
	6. Explain why the proper grade and cetane rating are important	Ag Mechanics and Technology	A	7	1
	7. Describe how to store gasoline, L.P.-GAS and diesel fuel	Ag Mechanics and Technology	A	7	1
	8. Describe why the storage of fuels is important	Ag Mechanics and Technology	A	7	1
	9. Describe crank case oil classifications and grade	Ag Mechanics and Technology	A	7	1
	10. Decide what class and grade of crank case oil to select for different engines and operating conditions	Ag Mechanics and Technology	A	7	1
	11. Explain why the correct oil is important	Ag Mechanics and Technology	A	7	1
	12. Select gear lubricant	Ag Mechanics and Technology	A	7	1
	13. Select hydraulic fluid	Ag Mechanics and Technology	A	7	1
	14. Select bearing grease	Ag Mechanics and Technology	A	7	1

	15. Describe how to store oils and greases	Ag Mechanics and Technology	A	7	1
	16. Explain why the proper storage of oils and greases is important	Ag Mechanics and Technology	A	7	1
D. Power Transmission	1. Identify the function and operating principles of tractor clutches, transmission, control systems, including brakes				
	2. Lubricate the clutch release mechanism				
	3. Check and service the hydraulic system oil reservoir				
E. Troubleshooting and Tune-up	1. Use ignition test equipment including dwell meters, tachometers, and timing devices	Ag Mechanics and Technology	A	6	3
	2. Test and service the battery and battery circuit				
	3. Adjust drive belts				
	4. Service the cooling system	Ag Mechanics and Technology	A	6	4,6
	5. Test and service the charging and cranking systems	Ag Mechanics and Technology	A	6	4,6
	6. Install diesel fuel filters and bleed the fuel system	Ag Mechanics and Technology	A	6	6
	7. Adjust control linkages including brakes, clutches, and safety disconnects				
	8. Properly pack front wheel bearings				
	9. Check and service the air cleaner	Ag Mechanics and Technology	A	6	4
	10. Change crankcase oil	Ag Mechanics and Technology	A	6	4
	11. Replace the oil filter	Ag Mechanics and Technology	A	6	4
	12. Check and service the crankcase breather				
	13. Check and maintain tractor tires				
	14. Adjust valve tappet clearance				
	15. Check and service tractor spark plugs	Ag Mechanics and Technology	A	6	3,4
	16. Clean the sediment bowl and fuel filter				
	17. Adjust the carburetor				
	18. Adjust the brakes				
	19. Adjust the engine clutch				
	20. Check and service the distributor				
	21. Time the ignition				
	22. Check and service the drive mechanism				
	23. Check and service the hydraulic system	Ag Mechanics and Technology	A	7	1
	24. Adjust the engine governor				
	25. Prepare the tractor for storage				