Fall 9-1-2020

DST 221.B01: Brakes, Suspension, and Undercarriage

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THE UNIVERSITY OF MONTANA
COLEGE OF TECHNOLOGY – MISSOULA
INDUSTRIAL TECHNOLOGY DEPARTMENT
DIESEL TECHNOLOGY PROGRAM

COURSE SYLLABUS

COURSE NUMBER AND TITLE: DET221T Brakes, Suspension, and Undercarriage

DATE REVISED: Fall 2020
SEMESTER CREDITS: 6

CONTACT HOURS PER SEMESTER: Lecture and Lab will be 25 hours per week

PREREQUISITES: None

INSTRUCTOR: Jim Harris
PHONE NUMBER: 406.243.7649
E-MAIL ADDRESS: jim.harris@umontana.edu
HOURS: Monday-Friday 9:00 am to 12:00 pm 1:00 pm to 4:00 pm
OFFICE LOCATION: College of Technology West Campus

RELATIONSHIP TO PROGRAM: Brakes, Suspension, and Undercarriage contributes to the objectives of the Diesel Technology program by increasing the student's knowledge of rebuild, maintenance repair and principles of brakes systems, suspension and crawler tractor undercarriage.

COURSE DESCRIPTION: Air brake design, construction and operation principles including an in-depth study of diagnostic procedures for troubleshooting and repair of brake systems. ABS brake systems will be studied in depth along with diagnosis and repair procedures. Suspension systems and undercarriage design and repair will be covered along with common alignment procedures found in industry.

COURSE OBJECTIVES AND OUTLINE:

1. Work is a safe manner in and around all equipment.
2. Perform rebuilding procedures found on heavy equipment and large truck brakes, suspension and undercarriage.
3. Perform common testing and adjusting procedures as prescribed by the OEM.
4. Understand the principal of brakes suspension and undercarriage components.
5. Identify, rebuild inspect, troubleshoot and adjust the following components:
    A. S-Cam brakes
    B. Air compressors
    C. Air governors
    D. Air suspension systems

E. ABS system
F. Hand tools and usage of tools in the repair of brakes, undercarriage and suspension.
G. Air brake control valves
H. Wheel bearing inspection and adjustment
I. Wheel seal inspections, removal and installation
J. Slack adjuster removal, installation and adjustment
K. Undercarriage components, track adjustment and inspection of components

Attendance will be taken at least once a day sometimes more each student will be in class on time. Students will be expected to be in class as per class schedule.If you are not feeling well-please do NOT come to class. Being late to class will count the same as being unexcused. Call 243-7649 if you are running late.

SAFETY: Students shall follow all West Campus safety policies and each student will always work in a safe manner or **REMOVAL FROM CLASS WILL RESULT!!! SAFETY GLASSES** must be worn when working around the press or anytime you eyes could be injured!!!

GRADING: Lecture counts for 50% of your final grade. You must pass lecture with a grade of C or better or you will not pass the class. (FOUR TESTS)

LAB counts for 50% of your final grade. Work habits, attitude, attendance, **QUALITY OF WORK** will be figured into the lab grade. Each completed lab project must have the **instructor signed** job sheet for the project to count toward the lab points; this is to be signed at project **completion time!** Please do not ask to have job sheets signed after completion. (2 to 3 days later). Not having this job sheet signed **VOIDS** the lab point. If the lab project is not done to the instructor's satisfaction you will be asked to repeat the project!!!! Your lab grade can only raise you final grade one-letter. You must pass Lab with a grade of C or better or you will not pass the class.

LAB PROJECTS: MINIMUM requirements require at least **ONE** each of the following projects by completed and signed off on a job sheet at time of completion, you must do quality work!!! Or the job sheet will not be signed off this means all parts laid out in and orderly fasion, no hammering apart or together, tools out away when finished with them, paper work done in a neat and orderly fashion!!! You can have **THREE (3)** lab sheets of any one thing count toward your final lab grade except where noted.
LAB PARTENERS: You will be assigned a lab partner however some of the requirements will be done on an individual basis copying of lab sheets will result in a **F** for the class!!! **DO NOT COPY YOUR LAB PARTNERS JOB SHEET!!!!**

1. Air compressor
2. Brake installation and adjustment
3. Wheel bearing inspection and adjustment
4. Air suspension inspection and adjustment
5. Track removal and installation
6. Swing frame removal and installation
7. Idler, roller, pin and bushing measurement, inspection and adjustment

LAB POINTS: Use the following scale to figure your lab grade using your INSTUCTOR SIGNED LAB SHEETS. (one signed sheet equals one point)

37-33 = A
32-28 = B
27-23 = C
22-18 = D
17-0 = F

NOTEBOOK: Each student will be required to hand in a notebook (3 ring binder) at the end of this Class containing all handouts in order and all signed job sheets in order of completion located in a separate section. Do not put unsigned job sheets in the notebook. Missing lab sheets will not count toward your lab grade. The overall notebook will count toward your final grade.

REQUIRED TEXT: CDX LearningSystems Fundamentals of Mobile Heavy Equipment