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| **COURSE INFORMATION** |

**MAG 50 – EQUIPMENT TECHNICIAN**

**Fall 2023 – Code: 57108**

**Heavy Duty Brake Systems**

**Lab M, W 3:00-5:50 AGM Room 5**

**Lecture M, W 6:00-6:50 LSH 1**

**Blake Sousa Office Hours: Mon & Wed – 7PM – 8PM**

E-mail: [blake.sousa@reedleycollege.edu](mailto:blake.sousa@reedleycollege.edu)

**Nurse Kelly Murguia**

[kelly.murguia@reedleycollege.edu](mailto:kelly.murguia@reedleycollege.edu)

559-494-3750

**Course Description 4** Units 2 lecture and 6 lab hours per week

Braking systems on today's heavy duty trucks are very complex. This course provides instruction in hydraulic and air brake systems. Theory and operation as well as components and their functions will be covered. Students completing this course will be eligible to take the ASE certification test in the Medium-Heavy Truck Certification Brake area (T4).

Basic Skills Advisors: Eligibility for ENGL 1A or ENGL 1AH, and MATH 45

Subject Prerequisites/Advisories: None

**Required Text:**

1. CDX Fundamentals of Medium/Heavy Duty Systems & Engine Access Card 1 yr
   1. ISBN – **9781284267747**
2. Required: 8” – 10” Tablet or I-pad, Or Laptop
3. Note Book and Binder with paper
4. On-Line Modules – **(Register by second week of school)**
   1. Meritor “BullPen”
   2. Bendix “brake-school.com”

**Required Materials**

* Approved eye protection/safety glasses with **clear** lenses (Z87.1 A.N.S.I.)
* Approved foot wear – **Work Boots with non-slip soles**
* Two work shirts (approximately $80)

California Embroidery

1. Blackstone #103

Fresno CA 93710

559-447-5304

**Student Learning Outcomes**

**Upon completion of this course student will be able to:**

* ***Inspect Heavy Duty Truck braking systems for safety and reliability***
* ***Service and Repair Heavy Duty Truck braking systems.***

**Objectives**

1. Inspect air supply and service systems
2. Inspect mechanical brake system
3. Inspect hydraulic brake systems
4. Inspect power assist brake systems
5. Inspect air and hydraulic antilock brake systems (ABS) and automatic traction control systems (ATC)
6. Service and repair air supply and service systems
7. Service and repair mechanical brake systems
8. Service and repair parking brake systems
9. Service and repair hydraulic brake systems
10. Service and repair power assist brake systems
11. Service and repair air and hydraulic antilock brake (ABS) as well as automatic traction control (ATC) systems

**Course Outline**

A. Introduction to Brakes

B. Wheel Bearings and Seals

C. Antilock Brake Systems

D. Hydraulic Foundation Drum Brakes

E. Hydraulic Foundation Disc Brakes

F. Hydraulic System

G. Power Assisted Units and Related Components

H. Air Foundation Brakes

I. Air Supply System

J. Air Service Circuits

K. Special Circuits

L. Trailer Air Brake Systems

**Brakes Labs**

Lab 1: Air Brakes – Air Supply and Service Systems - Compressors

Lab 2: Air Brakes – Mechanical/Foundation – Wheel end tear down

Lab 3: Air Brakes – Governor and supply systems

Lab 4: Disassemble, inspect and reassemble brake chambers, spring and service

Lab 5: Slack Adjusters

Lab 6: Inspect air tanks, one way valves etc.

Lab 7: S-Cam Brakes

Lab 8: DMV Air Brake handbook section 9

Lab 9: Air Disk brakes

Lab 10: Wheel Bearings

Lab 11: Hydraulic Brake Systems

Lab 12: Hydraulic Brake Foundation Brake systems

Lab 13: Power Assist systems and parking brakes

Lab 14: Bendix Check lists

Lab 15: Air Brake Chamber repair.

**Attendance**

Lecture: Attendance is required and roll will be taken at each class meeting. There is no difference between an “excused” or “unexcused” absence. A “tardy” is considered an absence unless the student contacts the instructor at the end of class to change the status from absent to tardy. Two tardies will count as an absence. Any student who misses more than two weeks of class meetings within the first 9 weeks of class may be dropped from the class by the instructor (i.e., class meets two times per week, 4 absences; class meets 1 time per week, 2 absences).

Lab: **Attendance in all labs is mandatory.** Students must make prior arrangements with the instructor to be excused from lab. At that time, the instructor will determine what, if any, make-up work will be appropriate.

Quizzes: There will be no make-ups for quizzes, quizzes will be online.

Tests: Make-up tests are limited to students who have made arrangements with the instructor prior to the required testing period or those students who have been excused by the Reedley College Dean of Admissions.

On-Line Training: Students are required to complete on-line training modules in addition to regular lecture and lab work. Failure to complete modules in a timely manner will seriously affect your final grade.

Time Clock: All students are required to punch in and out of shop class on a daily basis. Failure to do so will result in an absence. Students are expected to only punch their own cards and cannot, under any circumstances, punch another student’s card. Misuse of the time clock system can result in removal from the class. A participation score is awarded for time cards. You must receive a **minimum of 85%** on your time cards to pass this class.

**Grading Policy/Scales/Evaluation Criteria**

For maximum point consideration, all written assignments and term reports should be typed and double-spaced.

**All late assignments will be penalized 10% Each Day, including Sat and Sun**.

Point Distribution: 90% = A, 80% = B, 70% = C, 60% = D, 59% & less = F

Required attendance: Minimum 85% to pass the class

Assignments & Grades: Assignments/Quizzes 40%

Midterms/Finals 10%

Lab Assignments 25%

Lab Participation 25%

**Cheating & Plagiarism**

In keeping with the philosophy that students are entitled to the best education available, and in compliance with Board Policy 5410, each student is expected to exert an entirely honest effort toward attaining an education. Violations of this policy will result in disqualification for the course.

**Accommodations for Students with Disabilities**

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the instructor as soon as possible.

**Work Ethic -** Most students are enrolled in college classes to obtain a quality job or to enhance their skills for advancement with their current employment situation. Employers look for a punctual, responsible individual who is prepared to go to work. Our goal is to replicate the workplace environment where a student can develop and demonstrate these desirable traits.

* Punctual: It is customary to arrive at least 15 minutes before work begins. Individuals will be terminated if they are not punctual.
* Responsible: It is expected than an employee work every scheduled work day. Individuals will be terminated if they are not responsible.
* Prepared: It is expected that an employee be prepared with he/she arrives for work. Students must have work shirts, safety glasses, and appropriate footwear to participate in the laboratory. If a student is not prepared, he/she cannot participate and will receive a zero (see “responsible”).
* Professional Appearance: Shirts are to be clean and tucked in at all times. Long pants, work shirts and work boots are required daily. **Failure to adhere to this policy will result in dismissal for the day.**

**Language -** English is expected to be spoken in class for the following reasons:

* All course content and materials are presented in English and class discussions all take place in English.
* This policy is designed so that instructors and all students may communicate in a common language. Safety and the technical nature of this course requires clear communication.
* All individuals must have freedom of expression and are allowed and encouraged to communicate in the language of their choice outside of class times, including breaks.
* Appropriate language is expected at all times. Many people find cussing and vulgar language offensive so please be aware of your language when on campus or whenever representing the college.

**Behavioral Standards**

* Each student is responsible for his/her own work. Written assignments are not group assignments and no credit will be awarded for students who turn in the same work. Students suspected of cheating on tests and quizzes will receive no credit for that particular assignment and may be removed from the class.
* Turn **off** cell phones when in the classroom or shop.
* Texting in class is **unacceptabl**e. Cell phones are strictly prohibited in class and should not be seen. Unnecessary use of electronic devices will result in dismissal of the class for the day.
* Air pods, ear buds or any device in your ear, except for hearing protection and hearing devices, are prohibited.
* Reedley College is a **Tobacco Free Campus**! No tobacco products of **any** form are allowed while on campus. This includes “E-Cigarettes”
* Sleeping is **not** allowed in class. If you cannot stay awake you should go home and get some sleep, or try going to bed at an earlier hour.
* This class is set for the semester. All doctor’s appointments, interviews, meetings with counselor, and other types of appointments should be scheduled during your time outside of class.

**Important Dates**

* Last day to drop and qualify for a refund August 18
* Labor Day September 4
* Last Day to drop a class and not receive a letter grade October 6
* Veterans Day November 10
* Thanksgiving November 23 & 24
* Finals Week December 4 - 8

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| **FINAL EXAM:**  **Monday, December 4th @ 4pm**    **\*Final Exam is mandatory. Failure to participate will result in a non-passing grade**  **\*Attendance is also mandatory – See Attendance Policy above.** |

**Mechanized Agriculture Program Standards**

The following standards are designed to help ensure that any students wishing to enroll in one or more MAG classes are well prepared for a rigorous course of study. This preparation consists of the following:

* Have strong HS grades, preferably a 2.5 GPA or above. The program is very technical in nature and there are considerable reading and writing requirements.
* Take an aptitude test and perform at or above a basic level. This test consists of mechanical reasoning, reading for comprehension and information, and computations. It is an indicator of both your ability and aptitude in this field of study.
* Have a mechanical background. This could be in the form of work experience, previous shop classes or hobbies that involve mechanics. If you have never worked on equipment or machines, or even your own vehicles, this may not be the program for you.
* Possess a strong willingness to learn and grow. A strong work ethic is essential to succeed in this program.
* Have a clean driving record, pass a drug test, and be employable.
* Students unable to enter a cohort for any of the above reasons may still sign up for a single, stand-alone MAG course.
* Students who enroll in a cohort and perform poorly should be counseled into single courses where there is a greater likelihood of success.

**Daily Program Expectations for All Students**

* Be willing and able to be in class every day. You will be required to punch a time clock in this program on a daily basis. This is job training. Three hours of lab and one hour of lecture is a job!
* Be an active learner – one who is prepared for class each day by bringing along required text materials, takes notes in class, and regularly prepares for lessons.
* Purchase or acquire the required textbook materials, online modules, uniforms and safety equipment for the program. Must be acquired by the end of the second week.
* Complete the required on-line instructional modules in a timely manner. These training materials reinforce what is taught in the classroom and shop. Students who take the on-line modules seriously consistently perform at the top of the class.

On-Campus:

As we return Fall 2021, there are procedures to help keep students, faculty, staff, and their families safe and compliant with state regulations. This document is intended to provide guidance for those faculty and staff who will be on campus.

Please modify these procedures so that they are appropriate for your own area.

**COVID 19 Safety Practices**

**Masks**: Students, faculty, and staff are required to wear masks that cover the nose and mouth when entering, exiting, while inside buildings and when unable to social distance. Students who have medical need can use face shields as an alternative.

**Handwashing**: Students are required to wash their hands or use hand sanitizer prior entering classroom or other campus buildings.

**Social Distancing**: Maintain a distance at least 6 feet apart from others while on campus.

**Cleaning**: Disinfect areas that students and the public touch frequently. Each service area should develop specific guidelines on frequency based on the nature of student contact.

**Ingress and Egress**: Shared spaces have, when possible, designated an entrance and an exit door to minimize congestion.

**Reminders**: If in an area where students congregate, it might be appropriate to remind students that they should not be on campus if they are experiencing symptoms, that they need to hand sanitize if they have not recently washed their hands, that they should be wearing their masks, and that they need to be 6 feet apart. Signage will be posted, but verbal reminders are appropriate as well, particularly for areas where students form lines.

**Equipment**

**Computers**: Most open computer labs are temporarily closed. Students are encouraged to bring their own computers from home, if possible. If they do not have a home computer, have them contact IT which will issue them a computer to use for the semester. These computers will be used in all locations, including computer labs.

**Faculty and Staff Computers**: Shut down all office and service area computers after every use. The fog used to disinfect rooms will corrode the computer if the fan is left running.

**HVAC**: Appropriate ventilation is an important preventative measure; however, do not assume that your classroom door or windows should be open. HVAC systems are being adjusted for appropriate airflow. If your area is on Central Plant or Package HVAC systems, opening the doors and windows decreases ventilation. If your building utilizes evaporative cooling or has no cooling system, doors and windows can be opened if appropriate for your classroom setting. For more information contact Building Services.

**Policy and Process**

All employees must complete the health screening every day they come to campus (on the portal page). If you are not feeling well, have been exposed to an individual who has tested positive for COVID-19, or you have tested positive for COVID-19, stay home and contact your supervisor immediately and contact Human Resources for information on leave options. Close contact is defined as “someone who has spent 15 minutes or more time within 6 (six) feet or less of individual who has been exposed or is positive for COVID-19 while unmasked. COVID-19 symptoms are fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, or diarrhea.

* High risk individuals: For students and staff considered to be a member of a vulnerable population as a result of underlying medical conditions, age or other co-morbidities, or for those that need religious accommodation, are pregnant or nursing, or live with a person with compromised immunity, the College will work with internal partners, including Human Resources, student services offices, counseling, instruction and operations to provide additional, non-discriminatory protocols to reduce risk of infection. This will include a process for making requests for reasonable accommodations by an at-risk person through normal institutional processes. Human Resources and have developed a process through which faculty, staff, and students are informed about how to access the accommodations process on the College’s website.
* Symptomatic Students: If students are displaying symptoms of COVID, you are encouraged to remind them that they are not to come to campus with symptoms. Encourage them to go home and contact their healthcare provider or the Reedley College Health Services.
* Common COVID-19 Symptoms include, but are not limited to:
* Respiratory symptoms: cough, sore throat, shortness of breath
* Fever of 100.4 degrees F or higher or chills
* Review [CDC’s COVID-19 symptom](https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) for a full list.

COVID 19 Positive Student: If you have a student who tells you he or she is symptomatic or positive for COVID 19, tell the student to stay home and notify your supervisor and Nurse Kelly Murguia.

1. You may be required to quarantine for 14 days based on the Fresno County Department of Public Heath guidelines.
2. Consider visiting an available testing site in the area.

**Enforcement of Policies**

We have all seen that there can be push back on COVID mask policies. We ask that you remind students that our policies are following legal mandates from our governor and CDC Guidance for educational areas. If students do not follow policies, we encourage you to use the following as a baseline for your response:

1. Remind students that the policy is a campus-wide policy.
2. Have an individual conversation/dialogue with the student about why they are not complying. Try to resolve the situation yourself.
   1. If they do not have a mask, refer them to the free mask sites.
   2. If the student has a medical concern about using a mask, refer the student to Health Services.
   3. Document your interaction using a COVID Compliance Flag in Starfish. This flag will not automatically be sent to the student; however, COVID health services information will be forwarded to the student.
   4. If the situation is resolved between you and the student, document it with the flag, but close the flag when resolved.
3. If the student still does not comply, remove the student from the class for the day. Immediately contact the Dean of Students, Shannon Solis to document the encounter.

We discourage you from calling the police unless the situation escalates to an emergency. Work with the Dean of Students and allow the Behavior Intervention Team to deal with the student and to coordinate with police as necessary. (Some of the details of the Starfish notification are still being developed. Anticipate a separate, more thorough, communication on this closer to the start of the semester.)

**Modifying Policies**

These policies may need to be modified for your own work situations.  In making these modifications, please consider the following:

* Most Effective Measures: The most effective measures are facial coverings, handwashing, social distancing, use of proper hygiene when sneezing or coughing, and enhanced cleaning.  If you must modify these policies, keep these practices in mind.
* Follow the directives set by the Chancellor of State Center Community College District (SCCCD), the Fresno County Department of Public Health, the California Department of Public Health and the CDC guidance for institutions of higher education.  Talk to your Dean or the College Nurse if you need clarification.

These practices were developed by the Reedley College COVID-19 Taskforce, with broad representation from faculty and staff from multiple areas of campus.  We all know that these are unprecedented times; this guidance is subject to change as the situation evolves.

Additionally, we know that unforeseen problems might arise.  If you have a question or concern that has not been addressed by this guidance, please contact your area’s vice president, or another member of the COVID-19 Taskforce, who will take the concern to the Taskforce for discussion.  The COVID-19 Taskforce will host open forum trainings during the first weeks of classes to provide updates, hear concerns, and discuss solutions.